The Effect of Collaborative Output Activities on the Learning of English Relative Clauses

An empirical study of mechanical and meaningful output

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Abstract

The present study investigates the potential effect of collaborative output activities on the learning of English relative clauses. The main assumption was that the facilitative effect of output for learning relies significantly on the context of production and that a *meaningful* context would engage learners in psycholinguistic processing of the conceptualising, grammatical encoding and monitoring which are believed to be required for natural production of output. It has been claimed that these processing stages are not completely present in the *mechanical* context of production.

In order to test this assumption, a study was designed involving two groups of learners in (more) mechanical and (more) meaningful activities. The study further adopted a sociocultural framework and engaged learners in collaborative production while they were interacting with each other in L1 or L2. Thus, the purpose of the present study was to find out (a) whether the effect of meaningful output would be greater than that of mechanical output for learning a grammatical feature, (b) what linguistic features would be focused on during collaborative work and (c) whether the two groups would be different in their focus of attention.

The participants were 36 Farsi learners of English (9 pairs in each group), who completed three activities in three fortnightly sessions. Data sources consisted of the transcripts of pair-talk, completed worksheets from each pair session, pre-test and post-test results and observation notes. The transcripts were analysed for instances of language-related episodes (LREs), their type, nature, value, and outcome. LREs were further coded in terms of their principal focus on grammar, meaning, orthographic, identification and discourse features. The results showed that:

a) Although both groups made significant progress from pre-test to post-test, they did not differ significantly in their gains on the target linguistic forms, suggesting that both contexts contributed to the learning of English relative clauses.

b) There was a significant relationship between activity type and number of LREs: the meaningful output activities (picture-description, 'let's complain' and dictogloss) elicited significantly more language-related episodes (776 out of 1348) than did the mechanical activities (substitution, transformation and text-development).

c) The result of LRE analysis also indicated significant differences between the two groups in the types of episodes. While approximately half of the LREs in the meaningful group focused on lexis and meaning (46%), the majority of the LREs in the mechanical group were directed towards grammatical forms (77%) and a small portion was focused on meaning (14%).

Analysis of dyadic interaction showed a collaborative pattern for the majority of pairs, in which learners provided support for their peers by offering help, providing feedback and corrections and explaining rules. They resorted to their L1 and private speech whenever they encountered difficulty in completion of the activities. In particular, they used L1 to formulate their message content and to monitor the accuracy of their productions. The results indicated that the collaborative output activities were effective in 'pushing' the learners to verbalise their internal linguistic processing, focusing their attention on linguistic features and learning the relative clause structure. These findings have significant implications for pedagogy and research, which are discussed in the final part of the study.

Declaration

In accordance with Regulation 3.8.7 of programme of postgraduate study, I declare that this thesis has been composed entirely by myself. The work it contains is my own and has not been submitted for any other degree or professional qualification.

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DO	Direct object
EFL	English as a foreign language
GE	Genitive
LRE(s)	Language related episode(s)
NPAH	Noun Phrase Accessibility Hierarchy
OP	Object of preposition
PDH	Perceptual Difficulty Hypothesis
PFH	Parallel Function Hypothesis
RC(s)	Relative clause(s)
SDH	Structural Distance Hypothesis
SU	Subject

CHAPTER 1

Introduction

1.1 The Iranian context

There is an increasing interest in learning English among the large population of young Iranian learners. English, which is a foreign language for Farsi speakers, is used as a medium of communication on the internet, as a medium of instruction in some universities and EFL classrooms, and as the international language for trade and commerce. Its importance in developing intercultural communication has been emphasised by many Iranian EFL researchers (Aliakbari, 2004). Nonetheless, the educational setting for teaching English does not seem to be efficient, since the majority of learners, despite studying the language for seven years at state schools, are still unable to communicate effectively in English.

The current educational system in Iran consists of four levels: primary school (5 years), junior school (3 years), high school (3 years) and pre-university (1 year). The teaching of English starts at junior school, followed by further instruction at high school and pre-university. The learners receive approximately two to four hours of instruction per week. Including the EFL students attending the universities, some eight million students are engaged in learning English in Iran (Hashemi, 1997).

Despite the abundance of ESL and EFL textbooks published elsewhere, they are not considered appropriate for teaching in the cultural context of Iran. Based on the guidelines of the Ministry of Education, all English textbooks for state schools are designed nationally. This is mainly due to the educational authorities' tendency (within this sector) that '...English instruction which has not been acculturated and shaped to fit the country's needs constitutes a threat to national identity' (Hashemi, 1997: 5). The major components of nationally designed textbooks are vocabulary lists and structural patterns in reading passages (Birjandi and Soheili, 2002). The

lessons typically present discrete features of the language, isolated rules and explanations to the rules with no attention to form-meaning-function relationship. Although the learners receive plentiful input by reading these passages and listening to the teachers' explanations, their output is limited to answering teachers' questions and working on some exercises. Furthermore, no interactive learning opportunity is provided to encourage learning in a meaningful context. It seems that rules and structures of English are imposed on the learners and they are not allowed to engage actively with the language by formulating their own hypotheses. As a consequence, learners experiencing this traditional teaching method tend to assume passive and submissive roles in learning.

Many teachers are not interested in investigating how learners internalise the rules, structures and other features of the language. Although, the majority of Iranian teachers grasp the theory of the communicative approach such as group work, in practice they do not follow that approach (Razmjoo and Riazi, 2006). Since in the educational context of Iran, the communicative approach is not applicable, particularly in large classes, teachers generally follow the traditional grammar translation and structural approaches, which are characterised by systematic teaching of grammar in detail (Hashemi, 1997, Razmjoo and Riazi, 2006).

It is also worth mentioning that lack of English language context adds to the problems of learners in achieving efficient productive capacity in English. The teachers and learners typically share the same native language and access to native speakers of English is very limited; as a result, the learners do not seem to develop their abilities to engage in communication and accurate production of language. As Hashemi (1997: 2) has pointed out, most EFL learners do not learn English to communicate with their classmates or teachers, rather they try to learn language 'to decipher a text to get some information about their academic field of specialization'. In the case of relative clause formation, which will be the focus of this study, despite systematic and rule-oriented instruction, their composition lacks complexity and accuracy, displaying resumptive and incorrect relative pronouns.

1.2 The focus of the present study

In 1985, Swain argued that input is not sufficient for language learning and highlighted the role of output in L2 development. Since then, two lines of research have emerged in studies of output, which are particularly relevant to the present study. Some of the researchers investigating output focused on linguistic input and/or output and their relative effects on learning a particular linguistic form. Foremost among these studies are those of Izumi and colleagues, who have examined the effectiveness of output on learning through pre-testing and post-testing. However, two major components of output, *i.e.* interaction between the learners, and feedback, have not been included in their studies.

The other line of research, pioneered by Swain and her colleagues, investigated the functions of output by collecting qualitative data from the interactions between pairs of learners and analysing the *Language-Related Episodes* (LREs) they engaged in. Since Swain's studies have rarely involved systematic pre-testing and post-testing of the learners, the effect of output on learning a particular linguistic form has not yet been fully demonstrated.

To fill these gaps, the present study integrates these two lines of research by collecting both qualitative and quantitative data on the learning of English relative clauses. The activities designed for the study are intended to facilitate L2 learning by engaging learners in an interactive environment to provide opportunities to test their hypotheses, receive feedback from their peers, and 'notice the gaps' in their interlanguage (Schmidt and Frota, 1986; Schmidt, 2001).

A further important area of research that has received relatively little attention is the nature of output activities. Recent studies have indicated a need to investigate a range of grammar-based output activities featuring collaborative interaction. In particular, the role of meaningful production of language has been emphasised by a number of SLA researchers (e.g., Fotos and Ellis, 1991; Swain, 2000; Izumi, 2003a). Thus, the present study takes a further step by examining whether the meaningful activities

would show a greater evidence of learning than the mechanical activities that are traditional in the Iranian context.

1.3 Outline of the dissertation

The present study is situated within a framework of several second language acquisition theories. Chapter 2 presents the theoretical background to the research, including Swain's (1985, 1993, 1995) *output hypothesis*, her recent conceptualisation of *collaborative dialogue*, Levelt's (1989, 1992) *speech production model* and its relevance to the output hypothesis, and some of the major tenets of the sociocultural theory of Vygotsky (1978, 1986). The chapter ends with a discussion on the characteristics of output activity types and the justification for choosing the activities for the present study.

Chapter 3 reviews recent research concerning the effectiveness of output on learning, comparison of individual output and collaborative dialogue, and the use of L1 in learning L2. This chapter focuses in particular on the findings from research adopting LRE analysis in different tasks. Chapter 4 examines the structure of relative clauses in English and Farsi and discusses some of the major hypotheses proposed for the prediction of difficulty order in the learning of this structure. It further looks at the formal features of relative clauses, differences between the two languages and possible problems of Farsi learners in the acquisition of English relative clauses.

Chapter 5 presents the research questions and hypotheses, followed by introduction of the participants, the research design, and the instructional and testing materials. This chapter further explains the steps taken to analyse 32 hours of tape-recorded interactions and the development of an extended framework for coding LREs.

Data are analysed in three stages. Firstly, the findings from the test scores obtained in the two testing sessions are presented in Chapter 6. The scores of the learners in pre-test and post-test are compared to find out whether the learners made any progress after completing output activities and, if they did, whether there was any significant

difference between the two groups. Following that, each testing measure is separately analysed to assess the productive and receptive capacity of the learners in relative clause structure. Finally, their performance on each relative clause type is analysed in detail.

The second stage of analysis, covered in Chapter 7, involves the analysis of the learners' tape-recorded interactions. Based on the framework developed in Chapter 5, LREs are identified, quantified and categorised as grammatical, meaning-based, orthographic and so on. The interactions of the learners in the two groups are then compared in terms of the quantity, type, value, nature and outcome of LREs. Further analyses include comparison of time on task across and within groups, the relationship between LREs, time on task, and the gain scores of the learners from pre- to post-test. The results in this section provide clear evidence of the link between collaborative dialogue and L2 development.

The final stage of analysis, presented in Chapter 8, concerns the qualitative analysis of the learners' interaction during collaborative output. Pairs of learners are compared in terms of collaboration, meta-talk, rule explanation, and self- and other-correction. Using segments from the learners' interaction, this chapter shows how the learners tested their hypotheses and sought and offered assistance in co-constructing knowledge. It further considers the output activities employed in the present study and their effectiveness in focusing the learners' attention on the target linguistic forms.

Finally, Chapter 9 summarises the results and major findings of the present study and compares them to those in previous research. This last chapter also discusses the implications for further research and classroom practice.

CHAPTER 2

Theories of L2 learning and production

The theoretical foundation for this study is provided by Swain's (1995, 2000) *output hypothesis*, Vygotsky's (1978, 1986) *sociocultural theory* and Levelt's (1989, 1992) *speech production model*. The output hypothesis proposes that the act of producing language, under certain circumstances, contributes to the process of second language learning (Swain, 1985, Swain and Lapkin, 1995). Sociocultural theory posits that human development originates in society or culture and cognitive development occurs first at interpersonal level (i.e. interaction with social world) and then at intrapersonal level (i.e. through internalisation of social relationships) (Lantolf, 2007). These theoretical perspectives provide a justification for engaging learners in collaborative production of output. Insights from Levelt's speech production model are incorporated into the formulation of the research questions and the design of the activities. The final theoretical view adopted in this study is Keenan and Comrie's (1977, 1979) *Noun Phrase Accessibility Hierarchy* (NPAH), which guides the study in selecting the appropriate target linguistic forms (discussed in Chapter 4). This chapter presents a brief review of the three theoretical perspectives and the rationale for choosing the activities for practice sessions.

2.1 Output Hypothesis

The significance of output for second language learning was first acknowledged by Swain (1985, 1993, 1995). Studies on Canadian immersion programmes revealed that L2 learners demonstrated weaknesses in morphological and syntactic accuracy in their productions, although they had attained high proficiency in listening comprehension and communicative fluency. The instructional procedures in these programmes followed a comprehension-based account of L2 development, namely, Krashen's (1982, 1985) *comprehensible input hypothesis*. According to this hypothesis, learners acquire an L2 by understanding input that contains structures slightly beyond their current level of competence. Krashen claimed that production

(e.g., speaking) develops as a result of comprehension (e.g., listening) and plays a minor role in L2 development, since it is only a source of comprehensible input for peer learners. He maintained that learners can develop high levels of linguistic competence 'without any language production at all' (Krashen, 1998: 177). This hypothesis offered some pedagogical implications according to which learners were exposed to a rich source of comprehensible input, while little attention was paid to their output. The result of a number of empirical studies on immersion students showed a contrast between productive and receptive abilities of these learners (Harley and Swain, 1984; Swain, 1985; Harley, 1992).

Swain argued that the reason why these learners are weak at morphological and syntactic accuracy is that they are not adequately engaged in producing language. Comprehensible input, although essential to the acquisition of a second language, is not sufficient to ensure that the eventual outcome will be native-like performance in all areas of language (Swain, 1985). Instead, *comprehensible output* can facilitate learning by allowing learners to try out their interlanguage capabilities. In fact, learners need opportunities to be 'pushed' to convey their message 'precisely, coherently and appropriately' (*ibid.* 249). The term 'pushed' is intentionally used by Swain to indicate that immersion learners use certain strategies to get their meaning across and there is no demand (by their teachers or peers) to 'push' them to produce accurate and comprehensible output.

The *output hypothesis* posits that 'output may stimulate learners to move from the semantic, open-ended, nondeterministic, strategic processing prevalent in comprehension to the complete grammatical processing needed for accurate production' (Swain, 1995: 128). According to Swain, output might have a 'potentially significant role in the development of syntax and morphology' (*loc.cit.*) and it may increase the chance of focusing learners' attention on the means of expression to convey their message:

> In speaking or writing, learners can 'stretch' their interlanguage to meet communicative goals. They might work towards solving their linguistic limitations by using their own internalized knowledge, or

> by cueing themselves to listen for a solution in future input. Learners (as well as native speakers, of course) can fake it, so to speak, in comprehension, but they cannot do so in the same way in production (Swain, 1995:127).

Swain and Lapkin (1995) argued that when learners produce the target language they may become aware of the gaps in their existing interlanguage either through external or internal feedback. In her recent explication of the concept, Swain (2000) stresses the importance of meaningful production of the language. While producing, learners need to connect the linguistic form to its meaning. If their attention is focused on the intended structures in a meaningful way, then their interlanguage may develop more deeply and with more mental effort than when simply comprehending those structures. As a result, learners might be able to internalise new linguistic forms and improve the grammatical accuracy of their production. Therefore, meaningful output may involve learners in the cognitive processes required for building up and internalising a coherent (form-meaning-function) set of L2 knowledge. According to Swain (1995, 1997, 1998, 2000) output serves three possible functions in L2 development, which are briefly reviewed in the next sections.

2.1.1 Hypothesis testing function

Swain (1985: 249) suggested that output provides opportunities for *testing hypotheses*, that is, learners try out 'means of expression and see if they work'. In order to test their hypotheses, 'learners need to write or say something' (Swain, 1995: 130). In fact, what learners produce are their hypotheses about how their intended meaning should be expressed in the target language. The formulated hypothesis in the target language, in spoken or written form, might be incorrect. By receiving feedback, either external (from their interlocutors) or internal (by self-monitoring and syntactic processes), learners are made aware of the problems with their hypotheses. It is claimed that learners will reflect on their hypotheses and modify or reformulate their output. These modifications, which are derived from their *hypothesis testing* procedure, may contribute to L2 development. Several cognitive processes are at work when learners are testing their hypotheses and

finding a solution to the problems they have encountered. One such process is *manipulation*: learners separate language items into component features, create hypotheses about form and meaning, and compare target words to phonologically or semantically similar words by saying the words out loud (Borer, 2005, cited in Swain and Lapkin, 2008). The earliest studies on the output hypothesis focused on the hypothesis testing function of output (Pica, 1988; Pica, *et al.* 1989; Nobuyoshi and Ellis, 1993; Ellis and He, 1999).

2.1.2 Metatalk or conscious reflection/metalinguistic function

Swain (1995) refers to the *metatalk* function as *negotiation about form.* In the process of producing output, learners 'use language to reflect on language, as *metatalk*' (Swain, 1997: 7). Learners at higher proficiency levels may also deploy their explicit linguistic knowledge and metalinguistic terminology to solve their problems. They may make explicit their metalinguistic knowledge about formal features of language (e.g., lexical, grammatical) by verbalising their thoughts and decisions on appropriate forms to be used in their productions. This reflection on formal features of L2 may facilitate learning by enabling learners to control and internalise their linguistic knowledge and by understanding the interacting dimensions of the linguistic choice (form-meaning-function). In order to test this function, one would have to engage learners in interacting with each other in an activity that encourages reflection on language form while they are still focused on making meaning (Swain, 1995). Several studies in L2 have investigated whether or not learners actually employ metalanguage during collaboration (Kowal and Swain, 1994; Swain, 1998; Swain and Lapkin, 2001; Fortune and Thorp, 2001; Fortune, 2005; Suzuki and Itagaki, 2007).

2.1.3 Noticing / triggering function

The next argument given in favour of the output hypothesis is that output promotes *noticing*. Noticing is assumed to enhance learning by making learners conscious of their linguistic deficiencies. According to Swain (1998), noticing has several levels,

which could be exploited in formal L2 instruction in various ways. At one level, learners may reflect on their own output and *notice* the *gap* or mismatch between their interlanguage and the target language. Noticing the gap may trigger cognitive processes which might produce new linguistic knowledge or might consolidate the existing knowledge (Swain and Lapkin, 1995). This level of noticing corresponds to the '*notice the gap principle'* proposed by Schmidt and Frota (1986). They suggested that input has an impact on interlanguage development if it is *noticed.* Furthermore, for the *noticed* input to become *intake* learners have to compare what they have noticed in the input and what they are producing based on their current interlanguage. So, learners can benefit from input if they become consciously aware of the gap or mismatch between their interlanguage and the target language (Schmidt, 1990, 2001).

At another level, the act of producing target language might prompt learners to notice what they do not know or know partially about the target language (Swain, 1995). Swain and Lapkin (1995) argued that even if learners are not provided with explicit or implicit feedback by their interlocutors, they may still notice the limitations in their interlanguage when they encounter problems in producing target language. That is, learners may *notice a hole* in their interlanguage when they do not know how to 'express precisely the meaning they wish to convey at *the very moment of attempting to produce it*' (Swain, 2000: 100, emphasis is original).

Finally, learners may notice salient and frequent linguistic features in the input. Accordingly, input might be seeded with high frequency of target features (e.g., in *input flooding*) or the target features might be highlighted in the input through various formatting techniques (e.g., in *input enhancement*) to draw learners' attention to specific features (Sharwood Smith, 1993; Doughty and Williams, 1998).

The role of noticing as a cognitive tool in promoting learners' awareness of their gaps has been examined in a number of output tasks (Izumi, *et al.* 1999; Izumi and Bigelow, 2000; Qi and Lapkin, 2001; Lynch, 2001, 2005; Izumi, 2002).

2.2 Levelt's speech production model

Psycholinguistic evidence for the output hypothesis comes from Levelt's (1989, 1992) *speech production model*. This model has been applied by a number of SLA researchers in investigations into the linguistic procedures and components involved in the production of L2 (de Bot, 1992, 1996; de Bot *et al.*, 1997; Bygate, 2001; Izumi, 2003a). According to de Bot (1996: 535), Levelt's (1989) model is the most comprehensive model that has been successfully applied for 'modeling both monolingual and bilingual speech production'. This model suggests that learners pass through a number of stages when they attempt to convey their intended meaning. Several processing components — consisting of *conceptualiser, formulator, articulator, audition* and *speech comprehension system* — are involved in producing and comprehending speech. In addition to these components, three knowledge resources, namely, *lexicon*, *situational* and *discourse* knowledge are utilised to feed the system.

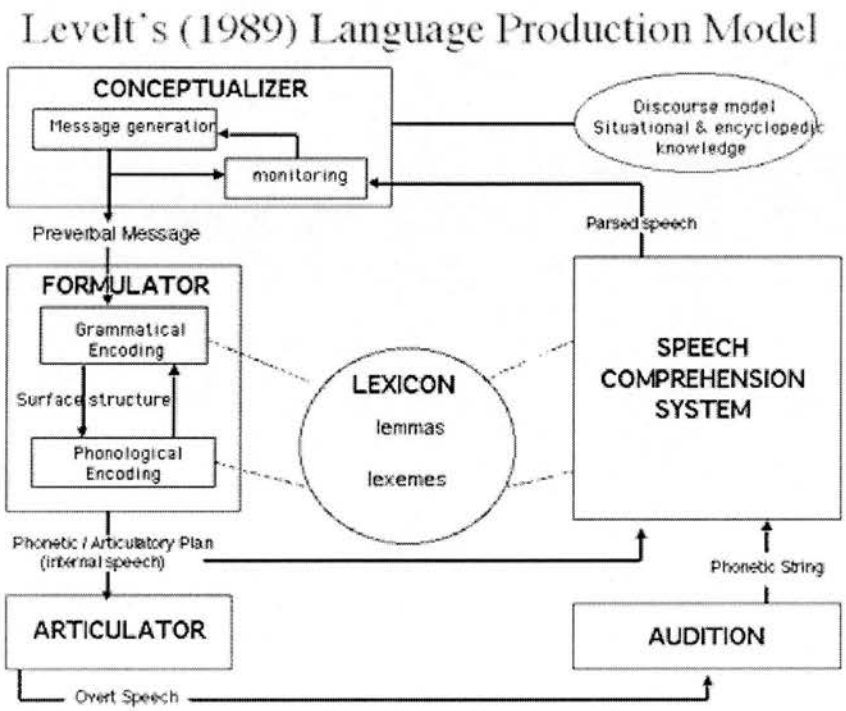


Figure 2.1 Levelt's (1989) Speech Production Model

The process of production starts from the conceptualiser, which is activated when the speaker has an intention to convey a message. The relevant information is selected considering the discourse factors and situational knowledge (e.g., the purpose of the speakers, their relationship with the interlocutors, their knowledge about the world and themselves and what was said before and what should be said next). After the information has been ordered, it is converted into a non-linguistic preverbal message which contains all the information needed for changing meaning into language. By receiving the preverbal message, the formulator is activated to encode it. The function of the formulator is to translate the conceptual message into a linguistic message by retrieving or accessing stored knowledge or information from the lexicon. The lexicon contains two types of knowledge: *lemma*, which constitutes semantic and syntactic knowledge, and *lexeme*, which constitutes morphological and phonological information. The process of encoding in the formulator takes place in two steps: *grammatical* and *phonological*. The grammatical encoding involves accessing information from lemmas and matching it with the information included in the preverbal message. This includes the matching of the meaning part of the message and syntactic ordering. Phonological encoding involves accessing morpho-phonological information (sounds and morphemes), and matching it with the information in the preverbal message. The output of the formulator is a *phonetic plan* in correct word order, which becomes input for the articulator to convert it into the *actual speech*.

In addition to these procedures, there is a monitoring system in the conceptualiser which supervises the outcome of the formulator and articulator. According to Levelt (1989: 13), the monitor can compare not only the *meaning* but also the *form* of 'what was said or internally prepared to what was intended'. The speech comprehension system plays a feedback role during production. Through accessing the lexicon, the speakers can recognise words and retrieve their meaning. The output of this system is *parsed speech,* which is attended and monitored in the conceptualiser. Thus, the monitoting system through the input provided by the speech comprehension system enables speakers to detect their own errors as well as others'. This is evident in the

self-corrections and other corrections occurring in the communication between the speakers.

2.2.1 Connecting output to Levelt's model

As mentioned earlier, Swain (1995) proposed that grammatical processing during production of output contributes to *accurate* production of language. Using Levelt's model, Bygate (1999) identified the exact role of the language processing system which might be responsible for the *accurate* production of language. He proposed that speakers use processing capacity in two ways: 'to manage the content (sorting out what to do) and 'to execute plans by connecting meanings to form (doing it). He emphasised the need for a balanced allocation of attention to these two crucial and inseparable elements and explained that:

> Shifting the bulk of attention to the content generally slows down production; whereas, prioritising speed of production generally limits attention available for the selection and handling of content. ... In language processing, prioritising content can, to use Levelt's (1989) terminology, include conceptualisation, i.e. attending to the message content (checking that all the relevant information content is included, checking that it is adequately organised), formulation (attending to the ways in which the information is expressed), and articulation (checking on the pronunciation, and intonation) (Bygate, 1999: 39).

He proposed that prioritising content involves *accuracy* and *complexity* and attending to speed involves *fluency* of the production. The accuracy of production involves two aspects elaborated below:

> One is the extent to which the speaker's message conforms to the information that is to be conveyed; hence all speakers have to monitor their formulation and articulation to check that they are keeping to their intentions (*loc.cit.*).

Considering the particular context of L2 learning, monitoring the accuracy of production in this way enables learners to recognise the mismatch between their communicative intentions generated in the conceptualiser and the output of the formulator and articulator. Following that, two things might happen: learners may modify their output or they may not be able to modify it due to their interlanguage limitation, which may lead to *noticing the hole* in their interlanguage.

> A second aspect of accuracy is the extent to which a speaker's selection of the formal features of the language (vocabulary, idiomatic phrases, grammatical morphemes, pronunciation patterns) corresponds to patterns that a representative section of the target population of speakers would find normal, and avoiding what they would find abnormal, for the meaning being conveyed (*loc.cit.*).

Monitoring the accuracy in this way may result in *noticing the gap* between the learner's interlanguage and the target language. That is, learners may notice that their production is different from the target language. This may lead them to seek the relevant input or other external means (e.g., peer learner) to convey their message accurately. Thus, the benefits of output for learning rely mainly on the grammatical encoding and monitoring.

Izumi (2003a) also identified the specific stages that might be responsible for interlanguage development in the process of producing output:

> The *grammatical encoding* in this process, in particular, requires a focus on syntactic form on the part of the language producer... the additional knowledge source stored in the discourse models and situational and encyclopedic knowledge can often compensate [*sic*] the lack of L2 knowledge in decoding the input data. The grammatical decoding, therefore, may effectively be bypassed in the course of input comprehension .... In production, on the other hand, the speaker is responsible for message generation and formulation that requires grammatical encoding. There is much less chance ... for the

> speaker to escape syntactic operations in the course of production (Izumi, 2003a: 183).

Learners may pass through syntactic processing stages in production, which appear to be less determining in comprehension of the language. Izumi adds that although adult native speakers are subconsciously doing grammatical encoding during production, this might not be the case for language learners, since their 'language use requires a great deal of controlled processing and attention' (*loc.cit.).* It is likely that the process of grammatical encoding serves as a *priming device* and makes the learner sensitive to 'the possibilities and limitations of what they can or cannot express in the target language' (*loc.cit.*).

In a series of empirical studies, Izumi (2003a) and Izumi and Izumi (2004) constructed an important argument based on Levelt's model. They considered the context of production and claimed that for output to be effective for learning, it must trigger certain cognitive processes:

> .....the effectiveness of output-based activities can be assessed in large part by how successfully these processes are engaged in these activities. A mechanical production task, for instance, does not likely involve genuine production mechanisms as described above; accordingly, its impact on SLA cannot be expected to be large. A fundamental consideration for pedagogy is that, for output to have any significant impact on learning, a meaningful context for language use needs to be created so that learners can acquire proper form-meaning connections in the L2- a focus-on-form consideration (Izumi, 2003a: 191).

The meaningful and natural production of language involves the coordination between the conceptualiser and formulator (Izumi and Izumi, 2004). In this process, the learners first generate their messages and then encode them into linguistic articulable forms. According to Izumi, separating these two processing components, as occurs in the mechanical production of output, in which conceptualising the message meaning is absent, does not engage learners in the real and natural

production of language. Therefore, the maximum benefit might be obtained when the learners start their production first by generating their message meaning and then by linguistically encoding it. This implies that a meaningful context in L2 production might trigger the natural production of language. The present study is aimed at exploring this claim. However, it should be mentioned that the activities in the current study will partially engage conceptual processes as well as grammatical and lexical encoding. In other words, the conceptualiser, which is responsible for message generation, will *not* involve the conception of a communicative intention, but will partially involve planning the content and form of the message in the meaningful activities. Thus, selection of information to be expressed is not intended to realise communicative goals of the speakers; rather, it is generated in response to some predetermined items. Therefore, the language used in the discussion of the assigned activities can not be viewed as the participants' involvement in real communication, and because of this limitation, the present study does not aim to investigate the communicative use of language.

2.2.2 Declarative and procedural knowledge

In cognitive psychology, a distinction has been made between *declarative* (knowing 'that') and *procedural* (knowing 'how') knowledge (Johnson, 1996). Declarative knowledge refers to factual and conceptual information, which can be stored as propositions in memory. Procedural knowledge, on the other hand, refers to the knowledge of how to perform certain tasks. An example in language learning context would be knowledge of a rule about language (declarative knowledge) and knowledge of how to apply a rule in real communication (procedural knowledge).

Levelt (1989) explained that the speakers have access to two kinds of knowledge: declarative and procedural. As mentioned in previous section, the model identified three processing components: conceptualiser, formulator and articulator. Each component contains a number of procedures (e.g., the conceptualiser involves conception of an intention, selection of the relevant information and ordering the information). These procedures make up the speaker's procedural knowledge, which

is represented as rectangular shapes in the model. The result of these procedures is deposited in the speaker's working-memory. The second kind of knowledge is declarative or factual knowledge that is stored in long-term memory. More specifically, declarative knowledge constitutes two sources of knowledge: (a) discourse model, situational knowledge and encyclopedia and (b) mental lexicon (represented as circles or ellipses in the model). Thus, the information, for example, in lexicon is of a declarative nature, but its function is to trigger various procedures in the system (de Bot, 1996). In fact, the procedures operate on the declarative knowledge.

Theories of knowledge representation have tended to advocate either a declarative or a procedural path. Johnson (1996: 82) discussed the distinction between declarative and procedural processing. Based on *declarativist* path, knowledge is stored in long-term memory 'in the form of a set of semantic networks'. The data are applied to particular situations through 'a general set of interpretative procedures'. In the *proceduralist* path, 'knowledge is embedded in procedures for action, and [is] not kept in some separate store' (*loc. cit.*). These two processing modes have a number of advantages and disadvantages. According to Johnson (1996), the declarative processing is generative and economical because the data are stored once and are available for use in any operation. Since conscious attention is devoted to the encoding of information, it can easily be modified when proved faulty and therefore the declarative processing is low risk. Despite these advantages, declarative path consumes a high channel capacity and is very slow because the information must be recalled from long-term memory. Procedural processing, on the other hand, is highly efficient, fast, and light on channel capacity; it fills little space in working-memory and there is no need to search in long-term memory. However, procedural path is limited in that it is non-generative and uneconomical because it is less general than the declarative knowledge and due to difficulty in modifying the faulty information it is high risk.

Anderson (1981, cited in Johnson, 1996) postulated that all knowledge (non-linguistic, L1 and L2) starts out as declarative and involves a progression from

declarative to procedural. Anderson's model has three stages: a) *declarative* stage, during which information is stored in long-term memory as a data base and a set of general interpretative procedures are employed to use the information, b) *knowledge compilation* stage, during which knowledge is converted into procedural form and applied directly with no intercession of interpretative procedures, and c) *procedural* stage, during which production rules become broader in their application and better rules are strengthened. This reduces the memory space needed for production. Anderson (1983) further claimed that it is not possible to acquire production rules directly, since it is difficult to change proceduralised knowledge.

Johnson (1996), however, argued that learning both L1 and L2 do not always follow the progression from declarative to procedural knowledge. Sometimes, learners acquire procedural knowledge, and if there is no declarative encoding, the learner's language may be left with fossilized errors. Therefore, he extended Anderson's model by proposing procedural to declarative way. He argued that language learning may occur in both ways and teaching methods should ensure that the learners process language in both way (DEC → PRO and/or PRO → DEC). Therefore, in any case, whatever the starting point is (either declarative or procedural), one kind of knowledge do not automatically convert into another. For example, some L2 learners may be able to state a grammatical rule, but fail to apply the rule when speaking. On the other hand, some learners may acquire the language in informal setting but be unable to state the rules of its grammar. Johnson emphasises that effort should be made to ensure that the declarative knowledge is maintained after developing procedural knowledge (in DEC → PRO) and that the declarative knowledge is added onto an already existing procedural knowledge (in PRO → DEC).

2.3 Sociocultural theory of mind

The sociocultural approach to learning and cognitive development was introduced by the Soviet psychologist, L. S. Vygotsky during the 1920s and 1930s. The major tenet of sociocultural theory is that learning is 'a socially constructed, historically (or

temporally) situated cognitive phenomenon involving the various semiotic tools and artifacts that have been produced by communities over time' (Duff, 2007). Although sociocultural theory is a theory of general human development, some recent approaches to understanding second language learning have adopted sociocultural orientation and, as a result, many empirical studies in L2 learning have drawn their theoretical motivation from the sociocultural theory — for example, studies on collaborative output (Swain and Lapkin, 1998; Swain, 2000), use of L1 as mediating tool (Swain and Lapkin, 2000), pattern of collaboration (Storch, 2001, 2002a, 2002b and 2005) use of private speech (Ohta, 2001) and corrective feedback in the *Zone of Proximal Development* (Aljaafreh and Lantolf, 1994; Nassaji and Swain, 2000). The present study adopts three notions from this framework, namely, *collaborative learning*, *mediation* and *private speech.*

2.3.1 Collaborative learning: theoretical aspects

Vygotsky (1978: 57) highlighted his view of the interdependence of social and individual processes by stating that:

> Every function in the child's cultural development appears twice: first, on the social level and later, on the individual level; first, between people (interpsychological) and then inside the child (intrapsychological).

In Vygotsky's view, learning is primarily a social phenomenon and social interaction plays a crucial role in the cognitive development of individuals. This process of development applies to all higher functions such as voluntary attention, logical memory and concept formation (Vygotsky, 1978). Drawing on Vygotsky's sociocultural theory, Swain (2000: 113) extended the scope of the *output hypothesis* and proposed that:

> ... internal mental activity has its origins in external dialogic activity... language learning occurs in collaborative dialogue, and that this external speech facilitates the appropriation of both strategic processes

> and linguistic knowledge. These are insights that a focus on input or output alone misses.

What is understood from Swain's proposition is that she tries to shift her focus from individual one-way production of output to interactive dialogic production of knowledge, which she refers to as *collaborative dialogue*. She argued that rather than considering *output* and *input* as two differing perspectives, they should be regarded as complementary features of language learning. With this justification, she replaced the term *comprehensible output* with such terms as *utterance*, *verbalisation* and *collaborative dialogue* to avoid using the dichotomous terms of *output* versus *input*. What is now more important for Swain is *how* learners interact with each other, rather than *what* they receive as input or *what* they produce as output. It is during this collaborative interaction that 'learners work together to solve linguistic problems and co-construct language or knowledge about the language' (Swain *et. al*, 2002: 172). So, it is implied that knowledge does not exist in *input* or *output* alone, but is socially created by the learners. While interacting in a dialogue, learners draw attention to problematic areas in their interlanguage and verbalise alternative solutions. Thus, collaborative dialogue can objectify thought and make it available for further scrutiny (Swain, 2000). Donato (2004) holds the same view and argues that:

> Collaboration is a powerful concept that moves us beyond reductive input-output models of interaction and acknowledges the importance of goals, the mutuality of learning in activity, and collective human relationship (Donato, 2004: 299-300)

Donato advocates a sociocultural approach to language learning and believes that the input-output approach, which is emphasised in interactionist theory, disregards learners' goals and participation in their own learning process.

The concept of *dialogue* is of critical value since it represents 'collective cognitive activity which serves as a transitional mechanism from the social to internal planes of psychological functioning' (Swain, 2000: 111). Lantolf and Thorne (2007: 207) also note the importance of dialogue and argue that 'learning collaboratively with others,

particularly in instructional settings, precedes and shapes development' and 'development arises in the dialogic interaction that transpires among individuals'.

2.3.2 Collaborative learning: practical features

Collaborative learning in classroom setting indicates a major shift from the traditional teacher-fronted to the modern student-centred approach. In this approach, teachers are no longer viewed as the only source of knowledge, which must be transmitted. Knowledge is rather created by the learners who work together to achieve a joint objective, i.e. learning.

The role of pair work in facilitating the learning process has been acknowledged in the educational domain (Webb, 1987, 1989; Hyde, 1993). Learners working in a pair may receive direct assistance, when their questions are answered immediately and their errors are corrected. Even when the learners do not notice the problem in their productions, the conflicts arising between the two learners' responses contribute to their understanding and recognition of the problem. Webb (1987: 202) states that 'disagreement among students forces them to seek new information or reevaluate their existing information'. The resolution of conflict may result in learning the material and reorganising their approach to the problem. Defending a correct response may also help the learners to clarify their ideas and consolidate their knowledge. Another possible benefit for peer-peer interaction is associated with the mode or nature of communication between the learners. Webb further notes that student-student communication may be more effective than student-teacher communication, since learners normally use familiar and direct language when addressing each other and are 'well tuned into each others' problem-solving processes' and, as a result, they can detect the core of a problem in each other's knowledge 'in a way that a teacher may not' (Webb, 1989: 25). Finally, learners working together typically have lower anxiety levels and fewer inhibitions and consequently, they are more inclined to seek help and attract feedback, compared to when working with teachers or individually.

While it is important to note the advantages of pair-work, it is also necessary to acknowledge the problems involved in its implementation. One problem with pair work is concerned with the quality of the feedback learners provide for each other. It is argued that learners may supply incorrect explanations for each other or they may persuade their peers whose original ideas are correct to adopt incorrect information, which might be learned or recalled in future encounters (Webb, 1986). This is the reason why some pedagogical researchers reject the idea of pair or group work as a classroom methodology. Prabhu (1987, cited in Hyde, 1993), for example, believes that learners must be able to compare their incorrect linguistic knowledge with the correct samples of the target language, which may not be supplied by a peer of their same linguistic level.

A second problem with assigning learners to pairs or small groups is unequal participation. This problem may be to some extent due to the personality features of the participants. It might happen that one member of the pair dominates the other member and appropriates the task. On the other hand, one learner may be reluctant to participate and consequently may adopt a passive role. Non-participation may result in her misunderstanding and misconceptions about the structure of the target language (Webb, 1987, 1989).

The equality of participation has been specifically examined by Storch (2001, 2002a, 2002b) in the L2 learning context. She considered two dimensions of *equality* (i.e., the degree of control over the task) and *mutuality* (i.e., the level of engagement with each other's contributions). Based on these two dimensions, she identified four dyadic patterns of interaction. Unequal participation in the task was particularly observed in her *dominant/passive* pattern, in which one learner dominated the interaction throughout the task and appropriated the task on her own. She or he allowed little or no contribution of the passive member.

The two problems discussed above can be partially overcome by methodological considerations. Regarding the provision of incorrect feedback in pair work, it is possible to provide additional feedback after completion of the activities, by for

example, providing plenary feedback for the whole class, providing original text after reconstruction, or providing answers to the activity. As regards the level of learners' participation and contribution to the task, it has been reported in a number of recent studies (e.g., Storch, 2002a) that not all learners exhibit domineering behaviour during their pair work. In case that unequal participation is observed in the pair interaction, it is possible to reassign the learners to different pairs and encourage them to assume collaborative roles. Thus, it seems that the advantages of engaging learners in pair work outweigh the disadvantages.

Having described the strengths and problems involved in pair work, it is now important to identify the major characteristics of collaboration, which differentiate it from typical assignment of learners into pairs or groups. According to Barkley *et al.* (2004: 5), the Latin-based word *collaborate*, meaning *co-labor*, entails all group or pair members being involved actively in the completion of the activity. If one member completes the activity while others are simply watching, it can not be regarded as collaborative learning. They define collaborative learning as 'two or more students laboring together and sharing the workload equitably as they progress toward intended learning outcome'.

From a Vygotskian perspective, Tudge and Hogan (1997: 8) have identified three levels of collaboration. Firstly, at the *individual* level, factors such as age, gender, motivation, goals, past experience and degree of competence with the problem on which the learners are collaborating should be considered. Secondly, at the *interpersonal* level, it is necessary to know the pair's 'past history together and the nature of their relationship, including socioemotional factors (whether the pair members are friends, acquaintances, or simply paired for the purpose of research; whether their past problem solving relationship has been relatively cooperative or competitive)'. Finally, 'at the *cultural-historical* level, it is important to understand the extent to which cultural and institutional supports have developed for the type of problem on which the dyad is collaborating' (*loc.cit.*). For example, some cultures emphasise cooperative work more than other cultures, and some cultures do not encourage cooperation between individuals of different genders.

Donato (2004) has similarly outlined four factors influencing collaborative learning. These factors are summarised below:

- *Activity* is 'dynamic and is not imposed externally on participants' (*ibid.:* 295). It should be meaningful and purposeful.
- *Social relationship* concerns the relationship between the individuals involved in collaborative activities (e.g., a hierarchical relationship between a knowledgeable teacher and a learner)
- *Historical and cultural context* involves individuals' goals, motives and past participation in a series of activities, which may reveal valuable information about the way they are interacting with each other.
- *Mediation* — in the form of objects, tasks, use of L1 or L2 — influences the collaborative activities.

It should be noted that although the two categorisations reflect similar tenets of the sociocultural theory on collaboration, they are not identical. For example, Donato (2004) considers the past history of the individual learner as an important factor in understanding the interaction between learners. Tudge and Hogan (1997), on the other hand, believe that it is the past history of the pairs of learners working together that influences the level of their collaboration. These fundamental features of collaboration reveal the complexity of the context of collaborative learning. Donato (2004) recommended that these elements need to be considered in any examination of collaborative learning. However, few studies in L2 research have considered such features as two learners' past history and experience of working together in a classroom context. It seems that inclusion of all these features in L2 research studies is still in its infancy.

2.3.3 Language as a mediating tool

According to Lantolf (2000), the key concept of the sociocultural theory is the *mediated* mind. As mentioned in the previous section, sociocultural theory emphasises the impact of social interaction on individual development. That is,

internal mental activity originates in external social activity. Within this framework, the individual and social are connected or *mediated* by symbolic tools. Lantolf (2000: 1) explains Vygotsky's main argument on the concept of *mediation* as follows:

> ..... just as humans do not act directly on the physical world but rely, instead, on tools and labor activity, ... humans use symbolic artifacts to establish an indirect, or *mediated*, relationship between ourselves and the world.... Included among symbolic tools are numbers and arithmetic system, music, and above all language.

Both physical and psychological tools are developed by human cultures over time (Lantolf, 2000). Among the psychological tools, language is the most powerful symbolic tool used for social interaction. The linguistic signs, according to Vygotsky, 'are used to organise, plan and coordinate one's own actions or the actions of others' (Brooks and Donato, 1994: 264). Within the context of L2 learning, it serves two main functions: as a cognitive tool, it helps the individuals process and manage meaning making and as a social tool, it helps them communicate with others (Swain *et. al*, 2002).

Swain (2000) considered language and dialogue as mediating tools in L2 learning. She foregrounded the notion of 'language mediating language' and argued that:

> The role of dialogue in mediating the learning of such areas as mathematics, science, history is generally accepted. Yet, when it comes to the learning of language, the mediating role of dialogue seems less well understood (2000: 110).

She went on to identify a number of mediating functions for language in collaborative dialogue. For example, language serves to focus the learner's attention and verbalise the procedures present in the L2 learning process. According to Swain, verbalisation mediates the *internalisation* of correct grammatical forms and meanings and *externalisation* of those features. By internalisation, she means that the linguistic features which were once available through external assistance now

become internally available for the learner. Reporting on a study by Holunga (1994), she listed a number of ways that the learners verbalised their inner thoughts while processing and producing L2. These included recognising the problems, predicting their linguistic needs, setting goals for themselves, monitoring their own language use and evaluating their overall success. The impact of language or dialogue as mediating tool has received support in a number of studies by Swain and her colleagues (e.g., Swain and Lapkin, 1998, 2000).

2.3.4 Which language is mediating tool: L1 or L2?

Considering the particular context of L2 learning, an important question arises here: which language, L1 or L2, can serve as a mediating tool in collaborative interaction? In order to provide an answer for this question, it is necessary to explain the two types of interaction that may occur during L2 learning. Ellis (1999) has distinguished *interpersonal* interaction, when interaction is *overt* and face-to-face, from *intrapersonal* interaction, when interaction is *covert* and inside an individual's mind. His distinction of covert and overt engagement in interaction corresponds to Lantolf and Thorne's (2007) view of learning as a dynamic process involving active engagement:

> The engagement may be overt, as in the case of social dialogue, or it may be covert as in the case of private dialogue (Lantolf and Thorne, 2007: 214).

According to Vygotsky (1986), *private* speech is a kind of speech which is addressed to oneself (self-directed) but is sometimes spoken aloud, as opposed to *external* speech, which is directed to other people and provides a social function.

With respect to *interpersonal* interaction or overt or external speech, use of L1 in some approaches to L2 learning has been viewed as counter-productive. In the more recent context, this might be because of the *comprehensible input hypothesis,* which stresses the importance of exposure to a maximum amount of L2 input. According to this hypothesis, one source of input is teacher and peer learner's language. However,

many learners are not proficient enough to interact with each other in L2. Insisting on the use of L2 in carrying out complex activities might impose a lot of pressure on the learners. Reporting on a number of studies, Swain and Lapkin (2000: 268) argued in favour of L1 use in collaborative pair work. They suggested that:

> The L1 serves as a tool that helps students... to understand and make sense of the requirements and content of the task, to focus attention on language form, vocabulary use, and overall organization, and to establish the tone and nature of their collaboration.

The findings of a number of studies (e.g., Brooks and Donato, 1994; Anton and DiCamilla, 1999; Swain and Lapkin, 2000; Storch and Wigglesworth, 2003) suggest that use of L1 may be beneficial to L2 learners by allowing them to initiate the task and move it along, sustain verbal interaction with one another, focus their attention on linguistic features and verbalise their problems.

With regard to *intrapersonal* or *covert* speech, use of L1 can assist learners in dealing with linguistically and cognitively demanding tasks. Support for the use of L1 during the learning process comes from empirical studies in the context of sociocultural theory. Frawley (1997) argued that 'languages make available to their speakers inventories of linguistic devices that can be used to focus mental activity' (reported in Lantolf, 2006: 75). It follows that learners of each language may use specific structures while engaging in inner or private speech and those structures may differ across languages. For example, speakers of English make use of such expressions as *oh*, *next*, *ok* and *let's see*. Referring to Vygotsky's main argument, Lantolf (*ibid.*: 74) proposed that 'it is the meaning of the sign, rather than its externalized formal properties, that is key to self-regulation'. 'Self-regulation', defined as 'the ability to accomplish activities with minimal or no external support', can be accompanied by deploying language in L2 learning context (Lantolf and Thorne, 2007: 200). Since the signal words during private speech (either in L1 or L2) do not serve a communicative function and address the speakers themselves, then the form of the articulated utterance is not important. What is important is its meaning

and function when it obliges the learner(s) to do or stop doing a particular action (Lantolf, 2006).

Lantolf (2006) has considered the use of L2 in mediating mental activity in further detail. He refers to a recent empirical study by Centeno-Cortes and Jimenez-Jimenez (2004), conducted with L2 Spanish learners in the intermediate and advanced levels. The learners were asked to sustain L2 private speech during a problem-solving task as far as they could. The results showed that advanced learners who sustained the private speech in L2 were unsuccessful at solving the problem. Lantolf (2006: 74) argued that L2 cannot be used for two functions at the same time:

> It is quite likely that this activity itself required that they focus a good deal of cognitive effort on generating self-directed speech in the L2; in a sense, producing Spanish became an intentional subgoal of talk and, therefore, the language was unable to fully serve its function as a problem-solving tool. .... The fact that speakers can use a L2 socially does not mean that they can use it to regulate cognitive activity because although it is derived from social speech, the psychological function of speech takes time for appropriate experiences to develop... .

Therefore, the language that learners use during problem-solving tasks may have a profound effect on the successful completion of the task. Having to interact solely in L2 may limit not only the learners' interpersonal interaction — due to inadequate L2 knowledge — but also their intrapersonal interaction — because of cognitive problems. Use of L1 may assist learners in maintaining their interpersonal relationship and managing the tasks. Furthermore, use of L1 may benefit learners during their private speech by giving them a private space to think about their learning process, manipulate, control and evaluate the outcome of their learning.

2.4 Incorporating the three theories into the present study

To increase our understanding of the process of second or foreign language learning, it is important to investigate the assumptions made about the learning process. The present research is motivated by the insights from the *output hypothesis*, *speech production model* and *sociocultural theory*. The current theories can be incorporated into the present study in the following ways:

- Drawing on Swain's extended version of the output hypothesis, it is possible to employ various output activities in order to examine the collaboration between the learners. In this way, the benefits of collaborative output — for example, through engaging learners in hypothesis testing, metatalk and noticing and its influence on linguistic change — can be examined.
- Based on Levelt's speech production model and Izumi's (2003a) speculation on the beneficial effect of meaningful output, a meaningful approach is claimed to benefit L2 learning more than a mechanical approach. In order to test this assumption, one would have to employ two output treatments: a *more meaningful* and a *more mechanical*, and compare the performance of the learners across the two treatment types.
- Sociocultural theory can also be applied by providing cognitive and linguistic support for the learners through collaborative work. Learners in both groups can work in dyads on their activities. By employing collaborative output, learners should feel secure and free to interact with each other. Considering the importance of L1 in mediating the learning and private speech, and to enhance interpersonal interaction, learners can be allowed to use their native language (L1) for interpersonal (between the learners in dyads) and intrapersonal (private speech) interaction.

Thus, the present study will involve learners in producing output in two separate groups: one group working on mechanical activities, which are intended to engage them in formulating the target features and articulating or producing them without generating the message content, and the other group working on meaningful

activities, which are intended to engage them in a movement from conceptualiser to formulator by first generating the content of their messages and then encoding them by matching the form-meaning relationship.

2.5 Characteristics of the output activities

To make an informed choice about the material representing the two types of activity, it is necessary to examine the definition of mechanical and meaningful activities in L2 learning contexts. The terms mechanical and meaningful are not dichotomous categories. In other words, it is not possible to assume that a mechanical activity is completely meaningless or a meaningful activity is completely non-mechanical. In most mechanical activities, there are some levels of attention devoted to meaning, at least, at the level of words. Therefore, the two variables should be considered to be *predominantly* or *more mechanical*, and *predominantly* or *more meaningful.*

A number of definitions have been suggested in the previous literature. Richards and Schmidt (2002: 323) identify two characteristics for these terms: '*A mechanical activity* is one where there is complete control over the student's response and where comprehension is not required in order to produce a correct response'. The same source defines the *meaningful activity* as an activity in which 'there is still control over the response, but understanding is required so that the student produces a correct response' (*loc.cit*).

McTear (1975, cited in Ellis, 1994) distinguished four types of language use: *mechanical, meaningful, pseudo-communicative* and *real communicative*. Both 'mechanical and meaningful language use involve a focus on the code': while in the mechanical use, 'no exchange of meaning is involved', in the meaningful use, 'meaning is contextualized but there is still no information conveyed' (Ellis, 1994: 577).

Erlam (2003: 564), following Lee and VanPatten (1995), also defined the two notions with respect to the presence or absence of attention to meaning:

> Mechanical activities are those that students can complete without attending to meaning and for which there is only one correct answer. ... Meaningful activities, on the other hand, can only be successfully completed when the meaning of both the stimulus and the response are attended to, ...

Based on the definitions presented so far, the following features can be said to characterise the two types of activity:

A *more mechanical* activity is an activity in which:

- there is complete control over the learner's response
- understanding is not required (or minimally required) to produce a correct response
- only one correct response is possible
- no exchange of meaning is involved

A *more meaningful* activity is an activity in which:

- there is less control over the learner's response
- understanding of the stimulus is required for correct production
- the learners provide their own responses
- the practice moves from sentence to connected discourse

Therefore, what seems to determine the nature of the two activity types is the degree of *control* over the learner's response, *understanding* of the stimulus and the learner's involvement in *meaning making*. If we consider the degree of *control*, we can design some activities across a continuum similar to the one in Figure 2.2.

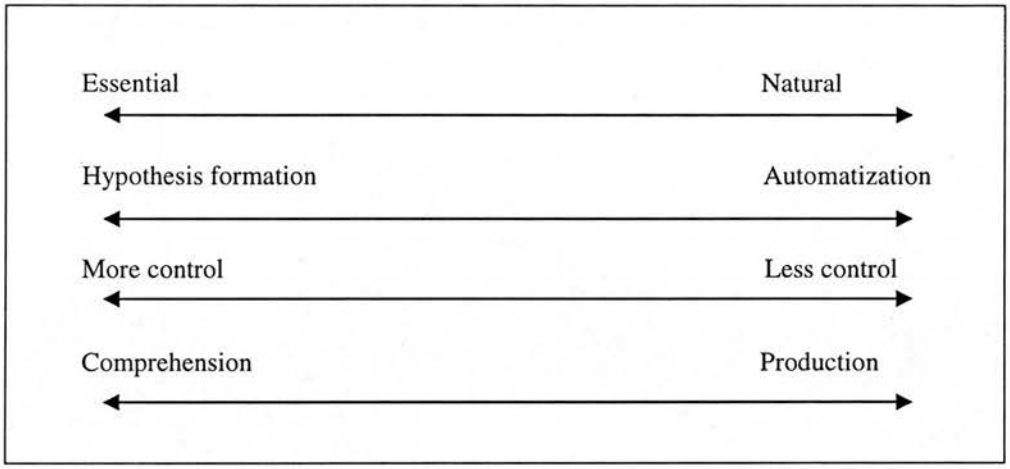


Figure 2.2 Relationship among structure-based tasks (adapted from Loschky and Bley-Vroman, 1993)

Loschky and Bley-Vroman (1993) proposed a four-dimensional scale for structure-based tasks. They considered the degree of *involvement* of the structural feature in the task, *hypothesis formation* and *automatization*, the degree of *control* by the task designer and the focus of the task on *producing* or *comprehending* a given structure. Since the first and third clines are essential for the present study, they will now be discussed in further detail. Figure 2.2 shows two types of involvement of a grammatical structure in a task: a) *task-naturalness*, in which a grammatical structure may occur naturally during the completion of a task and b) *task-essentialness*, in which the task can not be completed without the use of that particular structure. By combining the first and the third continuums, at the less controlled end of the continuum, a task can be designed to encourage the natural production of a grammatical feature and at the more controlled end of the continuum, an activity can be designed so as the use of a particular form would be essential for its successful completion. However, Loschky and Bley-Vroman, (1993: 140) acknowledge that 'while a production task can be designed such that a given structure is perhaps quite natural or useful, in general, it will be difficult to make that structure essential to communicative success'. They quote Matthei and Roeper (1983) saying that:

> We can, for example, ask our subjects to describe pictures of the actions depicted in little movies and thus gain some control over

> what our subjects will talk about. But we cannot manipulate other critical variables, like what syntactic form our subjects' sentences will take and what words they will choose to put in their sentences' (Matthei and Roeper, 1983: 162-163).

Indeed, designing a task that requires a learner to produce a particular grammatical form, although not impossible, is practically difficult. It should be mentioned that the notion of 'task essentialness' is important for the present study and a particular feature must be targeted prior to the study in order to determine precisely what type of output would be more beneficial for learning. The effectiveness of practice can then be examined through measuring the learners' abilities on that feature in two time intervals: prior to and after receiving the activities.

In addition to the difficulty involved in designing production tasks with the essentialness feature, the definition of our mechanical variable does not correspond to the main feature of the task. According to Nunan (1993: 59) a task is:

> ... a piece of classroom work which involves learners in comprehending, manipulating, producing or interacting in the target language while their attention is primarily focused on *meaning* rather than form.

A similar definition was offered by Skehan (1998: 95), who suggested that a task is 'an activity in which meaning is *primary*'. He further raised an important point with respect to the learner's focus of attention, arguing that if learners are free to choose between form and content in an open production task, they will give priority to the content of the message and focus their attention on it (Skehan, 1996).

Thus, the requirement for a task in its current sense is in contrast with the definition of our mechanical variable. Grammar textbooks have incorporated drills for highly controlled practice, which require learners to alter a given structure (e.g., Brown, 1994, Dakin, 1973). Extensive use of drills was the major characteristic of

mechanical habit formation in the *audiolingual* approach (Lee and VanPatten, 1995). Thus, they are the best candidates to represent mechanical practice in L2 learning. It is also possible to employ some activities for the meaningful practice, which encourage learners to reflect on language form while being primarily oriented to *meaning making* (Swain, 2000). Figure 2.3 shows the continuum for the present study.

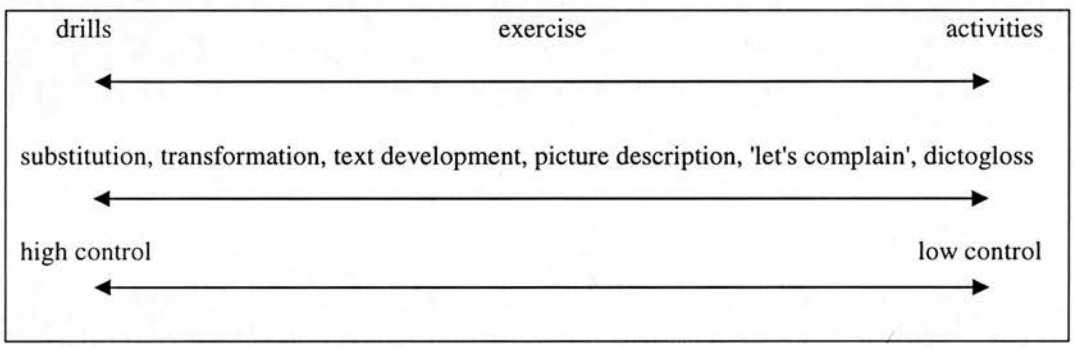


Figure 2.3 Continuum of drills and activities

To sum up, as Figure 2.3 shows, at the more controlled end of the cline, the learners are expected to focus solely on the linguistic form of the language (not content) and the structures to be used are fully controlled (Harmer, 1987; Ur, 1988). The learners can complete these structural drills without necessarily thinking about the content or knowing the meaning of what they are producing. On the other hand, at the less controlled or free end of the cline, the learners are expected to focus on the meaning or content of the activity and are free to choose their own language in their responses.

2.6 Summary

In reviewing the theoretical framework for the present research, three major perspectives were discussed. The study is mainly guided by Swain's extended version of the output hypothesis, i.e. collaborative dialogue. The three functions of output were reviewed — hypothesis testing, metatalk and noticing — as well as several factors influencing collaborative output. The research question is motivated

by insights from Level's speech production model and the benefits of meaningful output which is claimed to engage learners in natural production of language. And finally, the sociocultural theory of Vygotsky (1978, 1986) on co-construction of knowledge and Lantolf's (2006) and Swain and Lapkin's (2000) recommendations on the use of L1 during linguistic problem-solving activities set the scene for the context of the study. The activities designed and methodology adopted (described in Chapter 5) are intended to fulfil the objectives of the study.

CHAPTER 3

Empirical studies on output activities and language-related episodes

There is now a considerable literature on the output hypothesis, collaborative dialogue and analysis of language-related episodes (LREs). One line of research explores the relative effects of output-based and input-based instruction on L2 learning. These studies have compared two or more treatment types (e.g., *input-enhancement, structured input,* output) using experimental designs and sometimes have produced mixed results. The first section in this review considers some of those studies. The next series of the studies in this chapter involve LRE identification, categorisation and comparison in some tasks or between groups of learners. Following that, some of the major studies carried out on the comparison of individual and collaborative output and the relative effects of collaborative dialogue on L2 development are presented. Some researchers in this field have extended the scope of their studies and examined patterns of collaborative interaction within and between pairs of learners. The final section of this chapter presents the studies on the use of L1 in collaborative dialogue.

3.1 Output, input and L2 development

To find empirical support for the output hypothesis, Swain and Lapkin (1995) examined the effect of the production of written output on learners' recognition of problems in their interlanguage. They wanted to know if learners would identify problems when they attempted to produce target language and how they would overcome those problems. Eighteen students from grade 8 French immersion classes were asked to write an article about an environmental problem in French. The researchers used think-aloud protocols to elicit information about the internal linguistic processing of the participants. The learners attended separately and were tape-recorded in a quiet room. They were asked to use either English or French while verbalising their thoughts.

In the transcripts of the protocols, Swain and Lapkin identified LREs and analysed them in depth to determine what cognitive processes learners were involved in. LREs were defined as 'any segment of the protocol in which a learner either spoke about a language problem he/she encountered while writing and solved it either correctly or incorrectly; or simply solved it (either correctly or incorrectly) without having explicitly identified it as a problem' (Swain and Lapkin, 1995: 378). They classified LREs into several categories including application of a grammatical rule, lexical search, translation and spelling. In the analysis of the LREs, they compared two most-proficient and two least-proficient students. Swain and Lapkin noticed that the number of LREs produced by the two most-proficient learners was twice that produced by the two least-proficient learners. Furthermore, in the editing phase, the most-proficient learners attended to grammar and applied grammatical rules more than the least-proficient learners did. Their findings showed that the learners did notice their linguistic problems and subsequently modified their output. However, the extent to which the recognition of problems and various thinking processes may contribute to L2 learning was not addressed in this study. Furthermore, employing the think-aloud procedure may impose cognitive pressure on the learners, since they have to carry out two tasks at the same time: solving the problem and verbalising how they solved the problem. If the students solved the problem without verbalising their thoughts, they were prompted to verbalise their thoughts by the researcher.

Izumi and his colleagues have specifically investigated the effect of output on 'noticing' and the learning of conditional sentences and relative clauses in English (Izumi, *et al.* 1999; Izumi and Bigelow, 2000; Izumi, 2002; Izumi and Izumi, 2004). Their studies were of the experimental design, which involved pre-test, treatment and post-test sessions. The task which they particularly employed for the output group was a *text reconstruction* task which required learners to read a short text and reconstruct it as accurately as possible.

Izumi *et al.* (1999) tested the noticing function of output and examined whether the learners would incorporate the target form, *i.e.* conditional sentences, into their output. The participants were 22 college students from various L1 backgrounds. Half

of them were assigned to the control and the other half were assigned to the experimental group. Two testing measures were employed in pre-test and post-test sessions: a picture-cued production test and a grammaticality judgment test. Noticing was operationally defined as underlining those parts of the text which the learners (in both groups) considered to be important for their reconstruction.

Their study consisted of two phases. In phase 1, all participants read a passage and underlined those sections which they thought were important for their understanding or reconstruction of the passage. Next, the passages were collected and the output group reconstructed the passage while the control group answered true/false comprehension questions about the passage. Then their reconstructed texts and answer sheets were collected and they were exposed to the same input passage for a second time. Again, after collecting the input texts, the experimental group reconstructed the text for a second time and the control group answered the comprehension questions. In phase 2, the learners first wrote a composition, and then read a model text containing conditional sentences, which was written by a native speaker. Next, they wrote on the same topic for a second time. The control group read and underlined a passage on an unrelated topic and then answered a set of true/false comprehension questions. As mentioned above, underlining was carried out both by output and control groups in order to assess the degree to which they *noticed* the input.

The second and third hypotheses, predicting that the experimental group would incorporate the target linguistic form to their subsequent production and would make greater gains in the accuracy of that form, were not fully supported. The experimental and control groups incorporated the target linguistic forms into their output to the same degree and the difference in their accuracy was not significant in the first post-test session. However, in the second post-test, the experimental group outperformed the control group both in the degree of incorporation of target forms into their output and in the accuracy of production. With regard to the *text reconstruction* task used in the first phase of the study, Izumi and his colleagues noted that the task placed a high cognitive load on the learners. The participants had

to remember and reproduce the given passages accurately. This requirement of the task, in fact, 'blocked further processing of the target form' (1999: 444).

In a follow-up study, Izumi and Bigelow (2000) investigated the cognitive processes stimulated by output. They reversed the order of the two phases employed in the previous study. Thus, the learners in the experimental group first performed guided essay-writing task and then completed the reconstruction task. The researchers divided the reading passage into short and semantically coherent segments, to make it cognitively less demanding for the learners than the one used in their previous study. Eighteen ESL students from various L1 backgrounds participated in the study. They were divided into two groups of nine, each representing either the experimental or the control group. The control group received the same texts but did not produce output; they read the texts and answered comprehension and true/false questions. The comparison of the post-test scores of the two groups showed no significant between-group difference on any of the test measures (multiple choice recognition and picture-cued production).

Izumi (2002) compared four groups of learners with different output requirements and focused on English relative clauses. A *text reconstruction* task was employed for the output group and four grammar-related tests were designed to assess the ability to use relative clauses in English (sentence combination, sentence interpretation, grammaticality judgment, picture-cued sentence production). To reduce the cognitive load of the task, he divided the passage into short semantically coherent sections and delivered it by computer. The output groups were required to reconstruct the passage as accurately as possible. The groups that did not produce output (input only and input-enhancement) read the same passage and answered multiple choice questions. The control group attended only pre-test and post-test sessions. A comparison of the performance of the four groups from the pre-test to the post-test revealed that the output groups made more progress than the input groups and the highest gain belonged to the output-plus-input group. The enhanced input group did not show measurable gains in learning, although enhancement did have a positive effect on their noticing of the target form. The result of this study supports Swain's (2000)

view that output and input are complementary factors in SLA. Considering the text reconstruction task, Izumi found that learners varied considerably in their focus of attention to target linguistic forms as represented by their underlining of the text.

The most recent study in the series (Izumi and Izumi, 2004) compared the effects of oral output and *structured input* on learning English relative clauses. They wanted to know under what conditions output can best promote L2 learning. Three groups of learners from various L1 backgrounds were assigned to a) an output group, which was required to produce output while working on a *picture description* task; b) an input group, which was not required to produce output but to comprehend the input while doing a *picture sequencing* task; and c) a control group, which was asked to complete vocabulary exercises unrelated to the target form in the study. In the picture description task, eight pictures were presented to the learners by computer in each session (three sessions in total). A headphone (attached to the computer) and a microphone (attached to a recorder) were set up to deliver the sounds and record the participants' speech in the output group. Each picture was accompanied by a sentence aurally describing it. The sentence contained a relative clause, in which the relative pronoun referred to the object of a preposition. During a 15-second interval, the participants were required to produce output orally to describe the picture. Immediately after this input-output sequence, the learners were given another chance to listen to the same input and produce output for a second time. Similarly, in the picture sequencing task, the participants were exposed to the same aural and visual input. Eight pictures with aural description were presented on the computer screen. Next, during a 15-second interval, the participants were asked to choose the picture that best matched the description they had heard. For pre-testing and post-testing sessions, the researchers employed two testing instruments: a sentence combination test and a picture-cued sentence interpretation test. By comparing the performance of the learners in the pre-test and post-test sessions, they found that the input group outperformed the output group in learning the target features.

The weak performance of the output group is likely to be due to the nature of the task employed for this group. That is, the tasks in the output and input groups were not

similar in terms of attentional load (Robinson, 2003). In the picture sequencing task, the learners made use of three attentional resources, i.e. *aural, visual* and *manual*, which can be easily coordinated, compared to the picture description task, in which learners had to draw on *aural, visual* and *verbal* attentional resources. It seems to me that the coordination of these latter attentional capacities is very difficult for the output group within the short span of time. Therefore, the picture description task is more capacity-demanding than the picture sequencing task and this may explain the input group's superior performance on the post-tests. I think their study would be far more convincing if they had employed a third group engaging in written output (instead of oral output) and therefore, consuming *manual* attentional resource similar to the input group.

Although the studies comparing the relative effect of input to that of output offer valuable insights into the process of L2 learning, exposing learners to either input or output treatments in a laboratory setting and expecting a causal relationship between either of them and L2 development do not appear to be a natural approach. As Ellis (2006) has pointed out, the comparison between input-based and output-based instruction is meaningless in the classroom context, since in both practice types learners are involved in both output (e.g., in an input-based approach by producing the target feature for themselves as occurs in private speech) *and* input (e.g., in an output-based approach, by receiving the production of another learner as input).

A second drawback of these studies is that the output tasks did not involve learners in collaborative production. None of their treatments required interaction between the learners, negotiation and reflection on linguistic features. Therefore, the type of output produced by the learners seems to be unnatural since in everyday interaction, output is not normally produced in the absence of an addressee. As we will see in the next sections, learners can benefit more if they are assigned to pairs and required to produce output in collaboration.

The final problem with these studies is that L2 development is viewed as an object and end product in itself. The data collected through pre-testing and post-testing the

learners do not provide any information about how L2 is processed and produced and how learners recognise and resolve their problems during this process.

3.2 Language-related episodes in various tasks

A number of studies have examined the learners' discussion during the completion of different output tasks. Kowal and Swain (1994) argued that the choice of task and how participants interpret and complete it must be considered in using collaborative tasks in L2 classroom. Furthermore, referring to a study by Fotos and Ellis (1991), they argued that the quantitative analysis of the data does not always bear out the qualitative analysis. In Fotos and Ellis (1991), although the interactions generated a great deal of interactional modifications and exchanges, these were mechanical in nature, with little extension of the use of the target language (Kowal and Swain, 1994).

This was the first study by Swain and colleagues investigating the contribution of co-construction of knowledge and collaborative output on L2 learning. They were particularly interested in knowing a) what happens if learners talk about form in relation to a meaning they wish to convey, b) the relationship between the learners during task completion and the effect of this relationship on the quality of the interactions and c) the nature of feedback (accurate or inaccurate) the peers provide for each other. They hypothesised that the activities which promoted learners' output and encouraged them to focus on their output may enhance the accuracy of their production.

The task they employed was a *dictogloss* technique introduced by Wajnryb (1990). In this task, learners listen to a short passage (either tape-recorded or read by the class teacher) and take separate notes. Next, they reconstruct their own version of the passage using their notes. The participants were nineteen mixed ability students from an intact, grade 8 French immersion classroom. They focused on the acquisition of French grammar with particular attention to *present tense*, which had recently been reviewed by the participants. The study involved four dictoglosses employed at

fortnightly sessions over a two-month period. The learners' interaction during the completion of the third dictogloss was audio-recorded, transcribed and analysed. Following Duff (1986) and Doughty and Pica (1986), who proposed dyadic interaction as the most appropriate grouping for the L2 classroom, they assigned learners to self-selected pairs. In the transcripts of the interactions, they identified Critical Language-Related Episodes (CLREs) and categorised them into *meaning-based*, *grammatical* and *orthographic* episodes. According to Kowal and Swain (1994: 80), 'a CLRE began with the identification of a grammatical point to be discussed or a sentence or phrase which needed to be reconstructed and finished once the discussion was completed'. The total number of CLREs produced by the groups was 224, 42% of which focused on *grammar*, 31% on *meaning* and 28% on *orthographic* episodes (due to rounding inaccuracies, the total percent is 101 % in the original paper).

As mentioned above, the proficiency level of the participants differed; they were grouped as high, upper-middle, lower-middle and low proficiency levels in French. By extending Vygotsky's *Zone of Proximal Development* — which was originally defined as a situation in which an adult provides assistance for a child — Kowal and Swain (1994: 85) assumed that 'the more able peer will provide the same sort of assistance to the less able peer' in the L2 learning context, which encouraged them to assign learners to heterogeneous groupings. However, analysis of the transcripts revealed that in a pair of heterogeneous ability, the more proficient learner tended to do most of the hypothesising. They reasoned that the less proficient learner may not have contributed because they were a) willing for the more proficient learner to do the task, b) too intimidated to say anything or c) not allowed to contribute to the discussion and task completion. Kowal and Swain further observed that in the more homogenous pairs, the contributions of the participants were more balanced, with both members contributing to the discussion and the role of expert being fluid, alternating between the students. With respect to the grouping of the learners, they concluded that 'perhaps what needs to be avoided are extreme degrees of heterogeneity' (e.g., upper-middle and low), since there were some pairs with mixed abilities (upper-middle and lower-middle) who displayed successful collaboration

(Kowal and Swain, 1994: 86). Considering the task type, Kowal and Swain concluded that the dictogloss was successful in encouraging learners to attend to the accuracy of their language and form-function relationship.

Storch (1998) argued that communicative tasks do not focus learners' attention on the grammatical forms of the target language. Thus, to promote negotiation over grammatical forms, she employed four grammar-focused tasks: *multiple choice, text reconstruction, cloze* and *composition*. The tasks focused on the choice of article, verb tense, word forms and singular and plural nouns. Eleven students from various linguistic backgrounds at two undergraduate and postgraduate levels completed the tasks. They participated in two sessions. In the first session, the learners completed a text reconstruction task and in the second session, they worked on the multiple choice, cloze and composition tasks. They completed the tasks in the same self-selected dyads and one triad in both sessions.

Data analysis took place in two stages: firstly, the learners' talk during the completion of the tasks was examined for the number of LREs, and secondly, the way that the learners made their decisions on grammatical features was examined in detail. The results indicated that almost all learners' talk in the more structured tasks, i.e. multiple choice and text reconstruction, focused on grammar (100% and 93%, respectively). Less structured tasks such as composition elicited less attention to language and grammar (53%). Most of their talk was devoted to planning, brainstorming, generating ideas and producing the content rather than providing correct grammatical forms. Storch also found that the text reconstruction task produced the highest amount of metatalk focusing on linguistic features. In the second stage of analysis, she identified a taxonomy of knowledge resources in the learners' transcripts, such as application of a grammatical rule, offering the meaning of the words or phrases, intuition and contextual clues in defending their grammatical decisions.

Fortune and Thorp (2001) also examined the metalinguistic function of output and amended LRE framework introduced in the previous study (*i.e.* Kowal and Swain,

1994). They argued that 'analysis based on LRE counts, although valuable, fails to capture completely the complexity of the interaction' (*ibid.*: 143). Therefore, they introduced two further categorisations of *nature* and *value* to demonstrate major features of LREs (details will be discussed in Chapter 5).

With respect to the type of LREs, they amended Kowal and Swain's (1994) taxonomy by subcategorising *grammatical* episodes into *inflectional* and *derivational morphology, verb tense, verb form and gerund/ infinitive*. They further divided *discourse* episodes into: *reference, linking text elements* with an appropriate *connector,* and *lexical cohesion*. The grammatical episodes were examined in further detail to determine the use of meta-language in those episodes.

Their study involved two linguistically heterogeneous classes of EFL learners from 14 different L1 backgrounds. Each class consisted of five triadic groups and was divided into three proficiency bands based on a grammar test. Using the transcripts of the learners' interaction, Fortune and Thorp demonstrated how they used meta-language in a variety of ways to account for their decisions. These included a) meta-language alone, b) meta-language with the use of grammatical terminology, c) meta-language with a grammatical rule or generalisation and d) meta-language with the knowledge of text content. They explained that when the learners did not have access to relevant meta-language, they resorted to a number of strategies such as 'vocalisation of features in the output, tapping into each other's intuitions about the L2, and testing hypothesis through attracting feedback' (*ibid.:* 151).

Swain and Lapkin (2001) studied the nature of the two communicative tasks of dictogloss and jigsaw in further detail. They wanted to know a) which task type would generate more *noticing the gap*, *hypothesis testing* and *metatalk* and b) if there is any relationship between these processes and L2 development. The dictogloss task engaged learners in listening to a text read at normal speed. The students took separate notes on the content of the text and worked together to reconstruct the passage. The jigsaw task involved learners in constructing a short story based on a series of pictures. Both tasks depicted the same story, thus, they were 'similar in

content but different in form' (*ibid.*: 100). The researchers anticipated that since the jigsaw task is a 'meaning negotiation' task (Pica *et al.*, 1993), it would generate less focus on form than the dictogloss task would do.

Two classes of grade 8 French immersion students with mixed abilities attended the study. The data were collected in five stages, details of which are provided in Swain and Lapkin (1998) (see *section* 3.4). The pre-test and post-test items included multiple choice and grammaticality judgment tests, which were accompanied by pictures. The written production of the pairs was scored by two teachers using a five-point scale, assessing content, organisation, vocabulary, morphology and syntax. LREs in the transcripts of the pair talk were coded as lexis-based or form-based. They hypothesised that the dictogloss would generate more attention to form and the jigsaw would produce more attention to meaning than their counterparts would do.

The transcripts highlighted three salient differences between the two tasks: firstly, they differed in the type of stimulus — while the stimulus in the jigsaw task was *visual*, it was *auditory* for the dictogloss task. Secondly, the dictogloss offered a linguistic model on the basis of which learners could establish their own story, whereas the jigsaw did not. Finally, the two tasks differed in their cognitive demands on the learners' understanding. That is, while the pairs working on dictogloss produced their narratives in a paragraph form, those working on jigsaw produced their narrative in separate numbered sentences. Thus, the pairs in the former group had to deal with *discourse* requirements, such as linking their sentences together and giving coherence to them.

The pre-test and post-test scores of the two classes showed no significant difference, suggesting that neither of the classes made significant progress as a result of working on the task. Comparison of the LREs revealed that the two tasks did not differ significantly in a) the average number of LREs they produced, b) the average time spent on the completion of the task, and c) the average number of lexis-based and form-based LREs. Thus, contrary to the researchers' expectations, the learners in both tasks similarly focused on form. However, with respect to accuracy, the jigsaw

learners produced fewer correct pronominal verbs compared to the dictogloss learners. As regards discourse structures, the dictogloss learners attended to logical and temporal sequencing of their sentences, which resulted in paragraphs, whereas such attention was not present in the numbered sentences produced by the jigsaw students. Furthermore, the linguistic nature of the stimulus in the dictogloss and the less open-endedness in linguistic focus, compared to jigsaw, constrained the range of vocabulary the pairs used and the time they spent on the task.

The initial coding system introduced by Kowal and Swain (1994) was further extended by Benson, *et al.* (2005), who conducted a small-scale study to examine the focus and nature of the discussion occurring among ESL learners. They employed dictogloss since it is assumed to be a 'planned, closed, convergent and two-way task' (p.1).

The study involved three classes of learners of English from three proficiency levels — intermediate, upper-intermediate and advanced. They were adult learners coming from multi-lingual backgrounds, who were more exposed to a form-focused approach of learning than the Canadian immersion students participating in Swain and colleagues' studies. Thus, the researchers expected that the learners would have access to a wide range of meta-linguistic knowledge allowing them to discuss a variety of formal features of language during their interaction. The same text was used for all three levels of participants in order to increase the chance of discussion on similar linguistic items and allow for comparison of their performance. The text was read twice, with the learners listening to the first reading and taking notes during the second. After the learners were assigned to dyads and triads, a third reading was conducted to stimulate further discussion. While the learners were reconstructing the text in separate rooms, they were tape-recorded.

The researchers adapted Kowal and Swain's (1994) coding system, which included meaning-based, grammatical and orthographic episodes. They further divided the meaning-based episodes into *meaning-definition*, *meaning explanation*, *sentence-level meaning* and *text-level meaning*. They also added three categories including

discourse (i.e. discussion on how to connect text parts), *identification* (i.e. discussion on what was said by the teacher) with sub-divisions of text, sentence and word and *reading aloud,* representing those segments of speech where learners seemed to vocalise what they were writing. Analysis of one group from each level showed that a) the *grammatical* episodes were less frequent than other episodes in all three groups, b) the intermediate group were more concerned about *content* and *identification* than grammar, and c) the highest number of *identification* and *reading aloud* episodes occurred in the upper-intermediate group, who seemed to be less successful in completing the task than other groups. Furthermore, the learners made very little use of meta-language in their discussions, spending most of the time on reading aloud and identification of text parts. The categorisation of LREs in previous studies is presented in Table 3.1.

3.3 Individual and collaborative output

Another line of research compares the relative effects of collaborative output and individual output. In a further analysis of the same data as her 1998 study, Storch (1999) compared pair work (four dyads and one group of three) and individual work of eleven ESL learners from mixed L1 backgrounds in intermediate and advanced levels. The target linguistic forms included articles, verb tense, derivational and nominal morphology, which had rarely been considered in previous studies. The participants were required to attend two sessions. In the first session, they worked individually on a composition and cloze exercise and then completed a text reconstruction task in self-selected pairs (and one triad). In the second session (two days later), they worked collaboratively on the composition and cloze exercise but individually on the text reconstruction task. They were audio-recorded as they worked on the tasks in collaboration. The data for the comparison of individual and collaborative work were the completed exercises.

Table 3.1 Taxonomy of LREs in previous studies (adapted from Jackson, 2001)

Study	*Task type*	*Language-related episodes*
Kowal and Swain (1994)	Dictogloss	Meaning-based Grammatical Orthographic
Storch (1998)	Text-reconstruction Multiple choice Cloze Composition	Grammar Meaning Discourse Intuition
Swain and Lapkin (1998)[1]	Jigsaw	Lexis-based Form-based
Swain and Lapkin (2001)	Jigsaw Dictogloss	Lexis-based Form-based
Fortune and Thorp (2001)	Dictogloss	Grammatical Meaning-based Discourse Orthographic
Leeser (2004)	Dictogloss	Lexical Grammatical
Benson, Pavitt and Jenkins (2005)	Dictogloss	Meaning Grammar Orthographic Discourse Identification
Malmqvist (2005)	Dictogloss	Meaning-based Grammatical Orthographic
Storch (2007)	Text editing	Grammatical Lexical Mechanics

[1] In this study, the effect of collaborative output on L2 *learning* was examined.

The results showed that collaborative output on the cloze exercise was more accurate than the individual output. Apart from *articles* in this exercise, where more accurate production was observed in the individual learners' performance, the other grammatical features were more accurately produced in the collaborative work. Furthermore, learners in collaboration made more correct grammatical decisions in completing the text reconstruction task than when doing it individually. Analysis of the compositions showed that although individuals produced longer and more syntactically complex compositions, the compositions produced in pairs were more accurate. Storch (1999) argued that learners in group work are seemingly more motivated to produce correct responses to the task than learners in individual work.

Malmqvist (2005) investigated the effects of small-group interaction on written German output. She employed three dictogloss tasks: the first and third were completed individually and the second collaboratively. Twelve students with mixed abilities (*i.e.* high and low proficiency levels) participated in this study. Malmqvist formed triadic groups based on such variables as gender and proficiency level. Her assumption was that the learners would benefit most in heterogeneous groups. The analysis took place in three stages. She first compared the individually and collectively reconstructed texts in terms of text length and syntactic complexity. The result of this analysis showed that a) the collaboratively reconstructed texts had smaller variation in text length and were more uniform than the individually reconstructed texts and b) unlike the individually reconstructed texts, which contained incomplete sentences without subordinate clauses, they were syntactically more detailed and complex with full sentences. This result is in direct contrast to Storch's (1999) study, which reported more syntactically complex sentences in the compositions of her individual learners.

Following that, Malmqvist analysed audio-taped interactions of the learners during the reconstruction of the task, to determine the focus of their attention in LREs. The LREs were divided into meaning-based, grammatical and orthographic episodes. The results of LRE comparison demonstrated that the less proficient learners attended primarily to meaning and lexical items rather than grammatical items, giving support

to Leeser's (2004) finding. With respect to the outcome of episodes, the learners solved the problems correctly on most occasions.

Malmqvist further noted that in addition to proficiency level, personality traits can also influence the outcome of LREs and collaborative tasks. She observed that sometimes a less proficient but more confident member of a group can convince the more proficient learners to accept a wrong decision, thus, 'it is not always the people with the best talent for convincing who are right' (Malmqvist, 2005: 138).

Leeser's (2004) study concerned the effect of proficiency of dyads of learners on the number, type and outcome of LREs. Twenty one pairs of adult L2 Spanish learners completed a text-reconstruction task, *i.e.* dictogloss. Based on the instructors' overall ability ratings, he classified the learners into higher-higher proficiency (8 dyads), lower- higher proficiency (9 dyads) and lower-lower proficiency (4 dyads) levels. The transcribed pair talk was analysed for types of LREs (lexical and grammatical) and outcome of LREs (correct resolution of the problem, unresolved or abandoned problem and incorrect resolution of the problem). A total of 138 LREs were identified in the transcripts of 21 dyads. The learners solved their linguistic problems correctly on most occasions (77%) and the rest of their problems were approximately divided into either unresolved (11%) or resolved incorrectly (12%). With regard to the focus of LREs, 40% of the LREs addressed lexical features and 60% grammatical features. The comparison of the number and types of LREs produced by three proficiency groupings (H-H, H-L and L-L) showed a positive relationship between total number of LREs and the proficiency level of dyads. In other words, as the proficiency of the dyads increased, so did the mean number of total LREs. Moreover, the percentage of lexical and grammatical LREs varied according to the type of dyad: the higher proficiency learners (H-H) focused more on grammatical (67%) than on lexical (33%) items, whereas the lower proficiency learners (L-L) focused more on lexical (58%) than grammatical (42%) items.

The comparison of the outcome of episodes across the three dyadic groupings showed that although all three groups solved most of their problems correctly, the

higher proficiency learners solved more LREs correctly than did the other two dyadic types. Leeser concluded that the proficiency level of the dyads influenced the amount, type and outcome of LREs they produced during their discussions.

Storch (2007) repeated her earlier study with four intact ESL classes at university level. She wanted to know a) whether learners working in pairs would complete their tasks more accurately than learners working individually, b) the nature of the learners' talk during completion of the task, and c) whether the learners working in pairs would make correct decisions over the grammar. Participants in class A completed the task in pairs (9 pairs and one group of 3) and in class B individually (16 students). In the other two classes (C and D), the participants were free to complete the task in pairs or individually. The interaction between the students in class A was audio-recorded.

The participants were university students from different L1 backgrounds and in high intermediate level. Storch employed a text editing task, which required them to make changes to the text in order to improve its accuracy. The text was deliberately seeded with errors in verb tense/aspect, use of articles and word forms. The learners' decisions on the grammatical accuracy and lexical appropriateness of the text elements were scored as either correct/acceptable or incorrect/unacceptable. The transcripts of the learners' interaction were analysed for LREs, which were categorised as form-focused (F-LREs dealing with morphology or syntax), lexis-based (L-LREs dealing with word meaning and word choices) and mechanical (M-LREs dealing with punctuation, spelling and pronunciation). The analysis of the edited text scores indicated that the learners in the two individual and collaborative conditions did not differ significantly in the mean accuracy score. The participants in pair group (class A) focused more on grammar (67% of all episodes) than lexis (31%). Similar to Leeser's (2004) study, most of the LREs were resolved correctly (80%). The results also indicated that pairs of learners spent more time on the task than did the individual learners.

3.4 Collaborative dialogue and L2 development

Some of the studies investigating collaborative dialogue have also considered the value of learners' discussion for L2 development. One earlier study by LaPierre (1994, reported in Swain, 1995) showed evidence of learning after negotiating and hypothesising on language use. The study involved three classes of grade 8 early French immersion students. The participants in the two classes worked on a dictogloss in pairs and reconstructed the passage. Based on the transcripts of the learners, she developed dyad-specific post-test items. LaPierre found that when her learners solved the linguistic problems correctly during their negotiations, they gave correct answers to approximately 80% of the items on the dyad-specific post-test administered one week later. Similarly, when the learners incorrectly solved a linguistic problem while reconstructing the text, they provided incorrect responses to approximately 70% of the items on the post-test. This finding suggests that there may be a link between learner discussion during collaborative output and transfer of knowledge (correct or incorrect) to subsequent learning situation.

Swain (1998) examined the *metalinguistic* function of output and investigated the effect of metatalk on second language learning. She used dictogloss to focus the learners' attention on linguistic forms while they were expressing their intended meaning. Two classes of grade 8 French immersion students participated in this study. Four different dictoglosses were developed — two for modeling, one for practice and one for the main study, which was audio-recorded. The researcher first gave a mini-lesson (5-10 minutes) to the students in order to heighten their awareness of the grammatical point and increase the likelihood of their talking about it. However, after examining learners' meta-talk, Swain acknowledged that the need of the learners was a more decisive factor than the mini-lesson in focusing their attention on particular features in their LREs. That is, the learners talked about those features that they needed help with. In the analysis of post-test items, Swain found similar results to those of LaPierre (1994), indicating that when the learners correctly solved a problem in collaboration, they did so in the post-test session. Similarly, when they reached an incorrect solution during the reconstruction phase, they tended

to respond inaccurately to the relevant item in the post-test. Swain concluded that 'the students tended to "stick with" the knowledge they had constructed collaboratively the previous week' (1998: 79). Therefore, it seems that the effectiveness of collaborative dialogue is constrained by the decisions made during metatalk and the way that the problems are resolved (either correctly or incorrectly).

Swain (1998) improved on the research design of Swain and Lapkin (1995) by adding a post-test session to determine the effect of output on learning. Nevertheless, in a communicatively-oriented task, such as dictogloss, it is arguably less likely that learners' attention will be focused on morpho-syntactic features of language (e.g., number, gender, compound past and imperfect). Instead, learners will more readily negotiate about the lexical and larger syntactic units of the language while struggling to recreate a passage as accurately as possible. Secondly, as the results of this study indicate, learners might fossilise incorrect features if they have collaboratively constructed them in the treatment sessions. As Kowal and Swain (1994: 306) have argued, 'students can make wrong hypotheses and they do not identify all mistakes'. Therefore, to prevent the fossilisation of errors and transfer of incorrect knowledge constructed in the LREs, it is necessary to provide feedback to learners after the completion of the task.

Swain and Lapkin (1998: 320) advocated the view that 'language [or dialogue] is simultaneously a means of communication and a tool for thinking', that is, in addition to the communicative function of language, whereby concepts such as comprehensible input and output, transmission, encoding and decoding of message are applied, a second function of language is to serve as a psychological or cognitive tool.

They examined the LREs in the transcript of a pair of students as they collaboratively solved their linguistic problems while producing a short narrative story. Swain and Lapkin wanted to know to what extent mental processes (e.g., internalisation of other's language and regulation of one's own cognitive functioning) are manifested in the conversations between the two learners. A further aim of their study was to

determine if collaborative dialogue could result in linguistic change. Thus, their study examined 'dialogue as an enactment of mental processes and 'dialogue as occasions for L2 learning' (*ibid.*: 322).

Data for this study focused on two grade 8 French immersion students, who were given a jigsaw task. In this task, each member of the pair received half of a set of numbered pictures telling a story. The learners had to work out the story and write it in collaboration. The study was carried out over five stages/weeks as follows: a) administration of a pre-test developed from piloting the same task in other classes by the researchers, b) a familiarisation session consisting of a mini-lesson and joint story writing based on a series of pictures, c) watching a two-part video, which included a mini-lesson and a short video showing two learners writing a story based on a series of pictures, this was followed by audio-recording the learners while they were generating the story, d) transcription of the recording and developing dyad-specific post-test based on the content of the learners' discussion and finally e) administration of the dyad-specific post-test together with items from the pre-test.

Based on their pre- and post-test scores and the teacher's rating, one learner in the pair was more proficient than the other. In the transcripts, Swain and Lapkin identified lexis-based (in which learners searched for vocabulary) and form-based (in which learners talked about spelling, morphology, syntax or discourse) LREs. The transcripts of the pair contained a high number of LRE (n = 23), constituting 15 form-based and 8 lexis-based episodes. The result of this study also revealed a significant correlation between time on task and number of LREs (.78) and a significant correlation between post-test scores and the number of LREs produced (.62) within the whole class (n=12 pairs).

Storch (2002a) conducted a longitudinal study into the nature of dyadic interaction in an adult ESL university-level class. She argued that previous studies on small-group or pair work in L2 context had concentrated on linguistic interactions and negotiations of meaning, assuming that 'all small groups/pairs behave in the same way or that the nature of pair relation does not affect learning outcome' (*ibid.*: 120).

Her study involved learners from various language and cultural backgrounds, who worked in the same self-selected pairs throughout the sessions. Data were collected using three grammar-based tasks of *composition*, *editing* and *text reconstruction* in a writing class. The learners worked on three similar versions of each task, two versions of which were completed in pairs and one version was completed individually. Furthermore, they completed an editing task at the beginning and in the end of the study, which were considered as pre-test and post-test. The transcripts of the interactions of 10 representative pairs were analysed for a) patterns of dyadic interaction, b) the effect of the task type or time-passage on the pattern of dyadic interaction and c) the effect of the nature of dyadic interaction on L2 development.

In the analysis for the pattern of interaction, Storch used an 'inductive' method, that is, rather than establishing a predetermined categorisation and imposing it on the available data, 'the categories emerged from the data following a reiterative reading and rereading of the data' and 'noticing the salient features and patterns of interactions in the transcripts (*ibid.*: 126). These salient features included the way the pairs approached the task, the role they assumed and the level of their involvement and contribution to the task.

Based on a two-dimensional scale of *equality* and *mutuality*, Storch found four distinct patterns of interaction. She defined equality and mutuality as 'the degree of control or authority over the task' and 'the level of engagement with each other's contribution', respectively (*ibid.*: 127). The four patterns of collaboration were labelled as *collaborative*, *dominant/dominant*, *dominant/passive* and *expert/novice* which were relatively stable over one-semester period. Some of these categories, (i.e., collaborative and dominant/passive) will be used in my study on an ad hoc basis to clarify discussions and examine the relationship between the learners.

Five out of ten pairs displayed collaborative pattern on the *composition* and *editing* task and six displayed the same pattern in the *text reconstruction* task. These patterns formed early in the semester, and remained relatively stable throughout the semester regardless of task variation and passage of time. In the final stage, Storch

tried to connect the patterns of dyadic interaction to L2 learning by comparing the results of the pre-test and post-test. The results, however, indicated that most of the learners, regardless of their specific pattern of interaction, made progress from the pre- to post-test. Furthermore, due to the learners' exposure to the target language both in their classrooms and in the wider community, it was hard to make a direct link between the pair work and the post-test progress. Finally, the items in the post-test did not correspond to the items discussed in the pair work.

So Storch adopted a 'process-product' approach in her analysis, according to which she identified 'the opportunities for learning that members of a group constructed through their interaction and then examined evidence for the take-up of these opportunities by the learners in a subsequent task' (Storch, 2002a: 137). Thus, she examined the learners' individual performance for '*instances showing transfer of knowledge*', which was operationally defined as 'the learner using an item of vocabulary or a structure negotiated during pair interaction; the learner consolidating existing knowledge of the item or structure discussed in the pair talk; or the learner extending this existing knowledge to new contexts' (*ibid.*: 137). She further introduced *instances showing no transfer of knowledge* and *instances suggesting missed opportunities*. The analysis of the tasks completed individually by the learners demonstrated that *instances showing transfer of knowledge* from the pair talk to the subsequent individual performance were more frequently observed in the interactions of *collaborative* and *expert/novice* patterns than in the other two patterns. Categories of *no transfer of knowledge* and *instances of missed opportunities* were largely found in dominant/dominant patterns of interaction. Following Donato (1988), she argued that 'researchers cannot ignore the relationships formed in pairs or groups when investigating learner interactions' since the pattern of interaction can influence the process and outcome of language learning (Storch, 2002b: 318).

Storch's (2002a) study into the nature of interaction between learners is encouraging for researchers and classroom teachers; however, she seems to have overlooked a major factor in collaborative work. According to Tudge and Hogan (1997), it is

important to consider the cultural background of the learners when analysing their collaborative work. In exemplifying her dominant/passive pattern, Storch illustrates the relationship between a Vietnamese male, assuming the dominant role, and a Japanese female, adopting the passive role. Again, in her expert/novice pair, it is a Japanese male who takes the role of novice. She explains that the passive participant follows her peer's suggestions with phatic utterances without making any change or challenging those suggestions. Considering that both passive and novice learners come from Japanese culture, this increases the possibility that the cultural background of the learners may have intervened and influenced the level of their contribution. In Japanese culture, for example, 'it may be impolite to disagree to another person's face or to interrupt someone' (Hyde, 1993: 345) and as a result, these two particular novice and passive learners may have deliberately avoided direct disagreement due to cultural constraints. Storch does not provide further evidence of Japanese learners taking the dominant or expert role in the remaining pairs. Thus, the reason why the two learners assumed the passive and novice roles might be their cultural background, which imposes some constraints on their level of contribution and degree of authority over the task. It follows that cultural factors may well have influenced the equality and mutuality dimensions in Storch's categorisation.

3.5 Uses of L1 in communicative tasks

Some of the recent L2 studies, advocating sociocultural perspective have suggested some positive effects for the use of L1 in L2 learning context. Brooks and Donato (1994) argued that the encoding-decoding and message transmission perspective, which is widespread in foreign language classrooms, do not show the actual processes that learners engage in during verbal interaction in problem-solving tasks. They further argued that all interaction between learners during classroom communicative tasks is not necessarily intended to be communicative. Their study involved eight pairs of third-year high school English learners of Spanish participating in a two-way information-gap task. The learners sat opposite each other and were directed to draw diagrams by the peer's guidelines. They were asked to use Spanish (L2) during their conversation. The researchers examined three functions of

speaking: a) speaking as *object regulation* (*i.e.* using speaking to think about, make sense and control task), b) speaking as *shared orientation* (using speaking to share joint perspective on the task), and c) speaking as *goal formation* (using speaking to build individual or cooperative goals about the task).

Brooks and Donato illustrated segments of the learners' speech when they engaged in metatalk, which they defined as 'talk by the participants about the task at hand and the discourse that constitutes the task' (*ibid.*: 266). Almost all the metatalk in the learners' interactions occurred in L1 (English), which they believed to be a situation routinely observed among lower proficiency learners. Engaging in metatalk in L1 assisted learners to control the task by giving explicit comments on their own available linguistic tools. The authors, however, acknowledge that they 'are not suggesting that the use of L1 during L2 interactions is to be encouraged necessarily but rather that it is a normal psycholinguistic process that facilitates L2 production and allows the learners both to initiate and sustain verbal interaction with one another' (*ibid.*: 268).

Anton and Dicamilla (1999) examined the social and cognitive functions of L1 use in the collaborative interaction of adult English learners of Spanish. Their study involved five dyads of students in writing tasks in the L2 classroom. Drawing on Vygotskian sociocultural theory, they argued that the use of L1 can assist learners in providing '*scaffolded*' help and private speech as occurs in problem resolution. In the transcripts of the learners, the researchers identified segments of speech when learners 'engaged in accessing L2 linguistic forms, making sense of the form or meaning of a text and evaluating a text in L2'(*ibid.*: 237).

The learners provided mutual help through interacting in L1 which ultimately resulted in the resolution of the problems. As an intrapsychological tool, the learners used L1 to direct their own thinking when they encountered a cognitively difficult task. In this case, their vocalised questions did not seem to be addressed to their partner. Furthermore, the linguistic forms used during the private speech, although sometimes similar to the utterances addressed to each other and communicative in

appearance, were more elliptical. They used specific forms such as *no*, *okay*, *the*, and *so*, which were interpreted as evidence of the externalising of inner speech. Anton and Dicamilla argued that prohibiting L1 use in the classroom context means depriving learners of a powerful tool for learning, which could be used to meet high task demands.

Swain and Lapkin (2000) examined the functions of L1 use during the completion of a dictogloss and a jigsaw task. They argued that the use of first language may support and promote L2 development. Two classes of learners, with English as their L1, participated in this study. Twelve pairs in one class (D) completed a dictogloss task and ten pairs in another class (J) worked on a jigsaw task. From their analysis of the data, they identified all turns containing English and categorised uses of L1 as *moving the task along*, *focusing attention* and *interpersonal interaction.*

They examined the transcripts of the learners to determine whether the two classes differed in the amount of L1 use. The result showed that the amount of L1 use by class J and class D was similar and constituted 29% and 21% of their total turns, respectively. Both classes made the most use of L1 for *task management* especially for developing an understanding of the story. Since no vocabulary was presented for class J, they spent 27% of their L1 use on *searching for lexical items*, which was more than the amount (14%) spent by class D, which were supplied with the vocabulary they needed. They further examined the relationship between the amount of L1 use and the quality of the learners' written narratives, which were rated on a five-point scale. The findings showed a negative correlation between the percentage of L1 turns and the ratings on the language and content of jigsaw task. That is, the more use the learners made of L1, the lower ratings they received for their written narratives. This finding, however, was not true for the dictogloss class.

The results also indicated that the type of task influenced the variation in the use of L1 in the three functions mentioned above. More specifically, less variation was observed in the use of English for each of the three functions of L1 use in the dictogloss compared to the jigsaw task. Swain and Lapkin concluded that 'different

task types may generally provide greater or lesser needs for different uses of the L1' (*ibid.*: 266).

Another study carried out to investigate the role of L1 use in L2 setting is that of Storch and Wigglesworth (2003). Following earlier studies, they speculated that the use of L1 would support learners in analysing language more deeply than when they are confined to using only L2. Their study involved six pairs of learners speaking the same L1 (three pairs from Indonesian L1 background and three pairs from Mandarin Chinese L1 background). The learners completed two tasks together: a text reconstruction and a composition task. They were audio-taped while completing the tasks and then interviewed after task completion.

After transcribing and translating the pair talk, Storch and Wigglesworth analysed and calculated the quantity of L1 use as a percentage of the total use. Next, they divided the text into episodes and coded them for their functions. Four functions for the use of L1 emerged in their coding: a) task management, b) task clarification, c) vocabulary and meaning, and d) grammar. The learners reported in the interviews that the use of L1 had enabled them in definitions of difficult vocabulary and grammatical explanations, arguing a point and providing justifications. The two reasons offered by the learners for their reluctance to use L1 were a) it would take longer to complete the task if they used L1, and b) they would benefit more if they used the target language in L2 setting rather than L1.

3.6 Summary and implications for the present study

The findings of the studies reviewed in this chapter have a number of implications for the present study. The study by Izumi (2002), which compared the effect of output and input on L2 learning, showed that a combination of output and salient input (e.g., enhanced input) is more beneficial for L2 development and separating these elements does not reflect the natural context of learning and L2 use. Furthermore, Izumi (2003a) and Izumi and Izumi (2004) argued that the beneficial effect of output may depend on the nature and context of production. They left open the question as what type or types of output task can maximally benefit the learning

of a particular linguistic feature. To my knowledge, no empirical study has been carried out to test Izumi's speculation on the greater effectiveness of meaningful output. Thus, it would be interesting to find out under what conditions output can best promote L2 learning. Do learners employ a deeper level of processing in meaningful tasks, compared to that engaged in mechanical tasks? If learners work on a meaningful task, will their attention be drawn to the target linguistic forms?

As we have seen, a number of studies have investigated the collaborative production of output. The findings suggest that collaborative production may result in more accurate production of language than individual production. Learners may benefit from peer-peer dialogue by recognising their problematic areas and receiving feedback from their peers (Swain, *et al.* 2002). Their collaborative work on output might result in modification or consolidation of their current linguistic knowledge. However, apart from the study by Storch (1998), the majority of the studies have employed dictogloss. Further research is required to explore the nature of other grammar-focused activites and their influence on second language development. To what extent will grammar-focused activities help learners negotiate over the target form? How will they interact with each other during their completion? What features of language will they focus on during their collaboration? Will their collaborative production result in the learning of the particular grammatical form?

In addition to the limited use of grammar-focused activites, most of the previous studies on collaborative output have not demonstrated whether or not *learning* has actually occurred by engaging learners in subsequent production of the language. For this reason, some recent studies have recommended further empirical research into the relationship between learner engagement in pair talk and subsequent L2 development (e.g., Storch, 2007). Employing pre-test and post-test sessions in the present study may reveal the effect of collaboration on the learning of the target linguistic forms.

It should be underlined that mere collaboration between two learners may not always result in the correct resolution of problems or accurate production of language

(Swain, 1998). Learners may develop inaccurate structures and may not notice the mismatch between their interlanguage and the target language. Another limitation of the previous studies discussed in this literature review was non-provision of feedback for the learners after completion of the tasks. As is clear in classroom settings, feedback is naturally provided to the learners either by a peer or by the teacher; therefore, feedback, in the form of corrected answers, should be provided for the learners after the completion of the task.

A further limitation of the previous studies is that the participants have been either from mixed L1 backgrounds or, in the case of the Canadian studies, grade 8 French immersion students. There is consequently a need for research into collaborative dialogue in classes where the learners share an L1 background, as is the case in most teaching situations around the world.

The findings of some of the studies have also suggested that 'extreme heterogeneity' in students' proficiency level may hinder collaborative learning. To control for the variation in the performance of the groups or pairs of learners, all participants should be selected from the same proficiency level, as is commonly found in real EFL classrooms.

Finally, unstructured production activities such as *text reconstruction* and *dictogloss* may not direct learners' attention to the predetermined target linguistic forms. Since the learners are involved in conveying the content of the text, they tend to pay little attention to the form of their production (Storch 1998). Therefore, an additional attention drawing technique may be required to orient the learners' attention to the target linguistic forms and increase the likelihood of their discussion on those forms.

CHAPTER 4

The structure of English and Farsi relative clauses

One of the problematic areas for Farsi learners of English is the structure of relative clauses. A relative clause is a subordinate clause that may define or describe an antecedent head noun (Carter and McCarthy, 2006). Two types of relative clauses (RCs) are *defining* or *restrictive* and *non-defining* or *non-restrictive* clauses. In this chapter, the structure of RCs in English and Farsi is compared with respect to the differences that may present problems in their comprehension and production. Furthermore, four prediction hypotheses, which claim to predict the order of difficulty of RCs, are reviewed. These are the *Perceptual Difficult Hypothesis*, *Parallel Function Hypothesis*, *Noun Phrase Accessibility Hierarchy* and *Structural Distance Hypothesis*.

4.1 Rationale for choosing relative clauses as the target linguistic forms

Conventional teaching procedure in Iran involves a combination of explicit rule explanation and presentation of the grammatical forms via example sentences. The practice material in general English courses is typically limited to controlled mechanical exercises such as substitution, transformation and 'fill in the blank' exercises. Little or no attention is paid to *meaning* and *function* of this structure in the L2 context and teachers normally limit their explanation to saying that an RC is like an adjective that modifies a noun. Similarly, textbooks emphasise *formal* features of this structure concentrating, for example, on the distinction between human or nonhuman relative pronouns and their functions within the clauses. A comparison of the traditional methods with a more meaningful approach to teaching RCs deserves to be carried out.

In addition to the instructional procedure, other factors, such as the inherent complexity of RC structure and differences between the two languages, may influence the relative difficulty in learning this structure. As Izumi (2002) put it, the

syntactic structure of RC in English involves a long-distance dependency which requires a deeper level of processing. The discontinuation between the head noun and the main verb of the matrix clause may cause processing problems both in comprehension and in production of RCs.

Considering linguistic differences, relative pronouns in English take several forms such as *who, whom, that, which*, all of which equate to one form in Farsi, *i.e. ke*. The coalescence of several forms into one form poses a great deal of difficulty, particularly in the production of English relative pronouns. Employing an output-based approach in learning this feature might benefit learners by inducing *noticing the gap* or *mismatch* between their production and the target language.

There has been significant research on the comprehension and production of RCs by both L1 and L2 learners of English (e.g., Brown, 1971; Cook, 1973; Ioup and Kruse, 1977; Schumann, 1980; Tavakolian, 1981; Ioup, 1983; Romaine, 1984; Wolf-Quintero, 1992). However, little work has been done within the context of *output* studies involving instructional intervention. Izumi (2002) and Izumi and Izumi (2004), in particular, investigated the effect of output treatment on learning English object of preposition RC. In both studies, the context of learning did not involve learners in collaborative interaction and therefore no process (tape-recorded) data were collected to examine the learners' on-line processing mechanisms. Furthermore, their studies involved ESL learners from various L1 backgrounds (discussed in Chapter 3).

Another impetus for the consideration of RC structure is to investigate linguistic stages and cognitive principles claimed to be present in their acquisition. An important issue in the theories of second language acquisition is how learners acquire certain features in L2. Some researchers have suggested that learners may follow a particular 'developmental order' in the acquisition of some L2 features. Among these features are English *morphemes, question formation, negation* and *possessive determiners*. A well researched area with respect to the order of acquisition is RC structure. Various hypotheses have been proposed to predict the order of acquisition

of RCs. To determine how the development of this structure proceeds in L2 learners, extensive investigations have been carried out in English (Ioup and Kruse, 1977; Gass, 1979, 1980; Schumann, 1980; Ioup, 1983; Pavesi, 1986; Eckman, *et al.* 1988; Doughty, 1991; Hamilton, 1994; Izumi, 2003). Considering the rich literature on this structure, it is relevant to examine whether Farsi learners of English follow a particular developmental order in learning English RCs. An investigation on this structure can provide valuable information about the problems involved in producing and comprehending RCs.

4.2 Prediction hypotheses

Research on the acquisition of RCs by both first and second language learners has suggested that universal principles determine the learning processes (Kuno, 1974; Sheldon, 1977; Keenan and Comrie, 1977; O'Grady, 1997). Based on learners' processing strategies and the structural features of various RC types, several hypotheses have been proposed to predict the difficulty order in the acquisition of RCs. The major premise of these hypotheses is based on the three characteristics of the RC structure: (a) the syntactic role of head noun, i.e. the element modified by RC; (b) the syntactic role of the gap[2] or the element relativised inside RC and (c) the structural distance between the gap and the head noun (Diessel, 2004). These hypotheses are based on universal factors that have been comparatively examined across several languages by means of comprehension and production tests. Below, a brief discussion of each hypothesis follows.

4.2.1 Perceptual Difficulty Hypothesis

One source of processing difficulty is the position of the embedded RC. The embedding of RCs can take place in a number of ways. The following sentences illustrate this point:

(1)

[2] A gap is a trace which is left after moving an element from a sentence. For example, in the sentence "*The lion that [—pushes the horse] knocks down the cow*" the word *lion* moves leftward and leaves a gap behind itself.

- The *subject* of the main clause is the *subject* of the embedded clause:

  a) The lady [who teaches biology] is my sister. (SS)

- The *object* of the main clause is the *subject* of the embedded clause:

  b) The teacher admired the student [who passed the test]. (OS)

- The *subject* of the main clause is the *object* of the embedded clause:

  c) The car [which he bought] is very fast. (SO)

- The *object* of the main clause is the *object* of the embedded clause:

  d) She wanted the house [which the man bought]. (OO)

On the basis of the perceptual constraints on human cognitive processing, Kuno (1974) proposed the *Perceptual Difficulty Hypothesis* (PDH). He explained that the embedding of a defining RC in the middle of the matrix clause (as in sentences (a) and (c)) can interrupt cognitive processing. In fact, the embedded clause must be interpreted before the person can finish interpreting the main clause. Therefore, due to short-term memory constraints, comprehending sentences with RCs separating the noun phrase and the verb phrase of the matrix clause is more difficult than that of sentences with right-embedding clauses (as in sentences (b) and (d)). According to the PDH, the following predictions are made on the difficulty order in learning RCs (> means easier than):

Object-Subject (OS) & Object-Object (OO)>Subject-Subject (SS) & Subject-Object (SO)

Based on this prediction, when the RC branches to the right of the main clause, it may be easier to process the sentence than when the RC interrupts the constituents (subject-verb-object) of the main clause.

4.2.2 Parallel Function Hypothesis

Contrary to the predictions of the PDH, studies conducted on children's interpretation of RCs showed that subject-embedded RCs were easily interpreted as

object-embedded RCs (Sheldon, 1977; Tavakolian, 1981). Sheldon (1977) found that sentences in which the head noun and the relative pronoun have the same function (e.g., subject function in *the lion that pushed the horse knocks down the cow*) were easier for children to understand than having a non-parallel function (e.g., *the lion knocks down the cow that pushes the horse*).

Based on the investigation of RCs in first language acquisition, he proposed the *Parallel Function Hypothesis (PFH),* which explains the difficulty order in terms of the grammatical function of the coreferential noun phrases. It states that the difficulty in comprehension will arise when the grammatical function of the head noun in the matrix clause is not identical with the grammatical function of the relative pronoun in the embedded clause. Therefore, the PFH predicts the difficulty order as follows:

Subject-Subject (SS) & Object-Object (OO) > Object-Subject (OS) & Subject-Object (SO)

According to this hypothesis, when the head noun and the relativised noun have the same function of subject or object within matrix and RCs (as in sentences (a) and (d)), the structure of the RC should be easier to understand than when the head noun and relativised noun have different functions (as in sentences (b) and (c)). Support for the PFH was found in studies of children learning their native languages; however, research on L2 adult learners did not lend support to this hypothesis (Doughty, 1991).

4.2.3 Noun Phrase Accessibility Hierarchy

The *Noun Phrase Accessibility Hierarchy* (NPAH) is based on typological studies among languages of the world. It represents various grammatical functions that the noun phrase fulfils within sentences (Ritchie and Bhatia, 1996).Within this framework, '*Accessibility hierarchy* is a principle that attempts to characterize the types of RC construction found in the world's languages' (Eckman, 1996: 202). Keenan and Comrie (1977) proposed that the accessibility of a noun phrase for relativisation depends on its grammatical role, for example, whether the relativised

noun is the subject or object of the embedded clause. According to the NPAH, the easiest RC construction is when the relative pronoun is originally the subject of the RC. The increasing difficulty of RCs based on this hypothesis is as follows:

> Subject (SU)> Direct Object (DO)> Indirect Object (IO)> Oblique (OBL) or Object of Preposition (OPREP)> Genitive (GE)> Object of a Comparison (OCOMP)

The following sample sentences, adopted from Odlin (1989: 100), illustrate this hierarchy:

(2)

a) *The musician who* played at the concert is from China. (SU)
b) *The musician whom* we met at the concert is from China. (DO)
c) *The musician to whom* we sent the message is from China. (IO)
d) *The musician from whom* we got the message is from China (OPREP)
e) *The musician whose* son played at the concert is from China.(GEN)
f) *The musician who* George is taller than is from China. (OCOMP)

The sentences show that the focus of attention in the NPAH is on the *grammatical role* of the relative pronoun, no matter what role the head noun takes in the main clause. The positions higher in the hierarchy (e.g., SU) are proposed to be less marked and easier to relativise than the positions lower in the hierarchy (e.g., OCOMP).

It should be noted that many languages may not have some of the relativised positions in the hierarchy. Based on a cross-linguistic study, Keenan and Comrie (1977) proposed an implicational relationship among the six positions. They argued that if a language has a particular RC in a given position on the hierarchy (e.g., IO), then it will also form any RC in higher positions on the hierarchy (e.g., DO and SU). They further added that all languages have SU relatives, although they may not have all of the relativised positions lower in the hierarchy (e.g., Tagalog). Finally, they claimed that learners of all languages show the same order of difficulty proposed by the NPAH in learning RCs in second languages.

A large body of SLA research using data from European languages addressed the validity of the NPAH predictions, the majority of which found full support for the three higher positions in the hierarchy (Gass, 1979, 1980; Pavesi, 1986; Eckman, *et al.* 1988; Doughty, 1991; Wolfe-Quintero, 1992; Izumi, 2003b). Nonetheless, some of the recent studies have reported that the order of the acquisition of RCs in East Asian languages (e.g., Japanese) goes against the predictions of the NPAH (Kanno, 2007; Seon Jeon, 2007; Yabuki-Soh, 2007; Yip and Matthews, 2007).

In response to the findings of these studies, Comrie has argued that many structures considered as RCs in Asian languages should be reclassified as *attributive* clauses (Hawkins, 2007). These attributive or '*gapless* relatives[3]', which are semantically oriented — as opposed to '*gap-filler*' RCs, which are syntactically oriented — were not included in the original formulation of the NPAH (Gass and Lee, 2007). Juffs (2007: 362) also explains that these constructions, for example in Chinese, which seem to have the same function as RCs in English are 'loosely associated with the head NP semantically and pragmatically but not necessarily syntactically'.

In his recent explication of the hierarchy, Comrie (1998, 2007) further acknowledges that the acquisition order proposed by the NPAH does not indicate a clear-cut differentiation, but a differential ease of acquisition. Eckman (2007) also adds that if two SU and DO RCs are equally produced, this does not violate or reject the NPAH, but if for example, OP emerges earlier than SU then this could be considered as rejection of the NPAH.

4.2.4 Structural Distance Hypothesis

The *Structural Distance Hypothesis* (SDH) was proposed by O'Grady (1997) to explain the difficulty level of RCs. This hypothesis makes a similar prediction to that proposed by the NPAH, stating that subject RCs are easier to understand and produce than object RCs. O'Grady *et al.* (2003: 435) argued that processing considerations

[3] 'Gap-filler relatives are more syntactically oriented due to a necessary link between the moved position of an antecedent, but 'gapless' RCs are more semantically oriented because an unmoved argument has to be interpreted in its base-generated' (Gass and Lee, 2007: 330).

are responsible for the contrast between the two structures (SU and OB) and attribute this contrast to the 'differences in the depth of embedding of the gap'. The SDH can be implemented by simply counting 'the nodes[4] intervening between the gap and the head of the RC' (*loc.cit.*). Sentences (a) and (b) below show the structural difference between the subject and object RCs:

(3)

a) *The lion* that [S — pushed the cow] (SU)
Number of nodes between the head and the gap = 1 node (S)

b) *The lion* that [S the cow [VP pushed —]] (OB)
Number of nodes between the head and the gap = 2 nodes (VP & S)

As can be seen in these examples, the structural distance between the head noun (*lion*) and the gap (represented by dash —) in sentence (b) is greater than that in sentence (a). This might explain why the former sentence is easier than the latter to comprehend and produce.

4.3 Target linguistic forms

Since the nature of the present study requires the participants to work in collaboration, it seems to me that including a wide range of RC types may benefit the learners. Similar studies on output, involving pair work and collaborative production, have concentrated on many features of L2 (Storch, 1998, 1999; Swain, 1998). Therefore, working in collaboration, learners should have more topics to discuss with each other and may produce more metatalk. Furthermore, including more than one RC type should give variation and prevent boredom on the learners' part, which might otherwise result from working on one form over several sessions.

From the four hypotheses discussed above, the NPAH has been studied extensively in previous research on adult L2 learners. Furthermore, the previous research on the output hypothesis has tested the predictions of NPAH with learners from different L1

[4] In generative grammar, a node is 'a point in tree diagram connected to a branch' (Letourneau, 2001: 551). There is a symbol for a grammatical category (e.g. NP, VP) for each node.

backgrounds. To find out whether Farsi learners would perform similarly, the present study targets the RC structure based on the assumptions of the NPAH. That is, the instructional material for this study focuses on three higher positions, namely, subject, direct object and object of preposition. Considering the learners' linguistic level (i.e. low intermediate), they should not be exposed to a form far beyond their possible developmental level (e.g., comparative RC). Instead, the testing material can additionally include genitive RCs to examine how learners perform on this type, too. Table 4.1 shows the target linguistic forms in the present study.

Table 4.1 Target linguistic forms

Characteristics of RCs		**Target forms**
Functions of relative pronouns	Subject	*
	Direct object	*
	Indirect object	—
	Object of preposition	*
	Genitive	*
	Object of comparison	—
Types of RC	Defining	*
	Non-defining	*
Levels of formality	Highly formal	—
	Informal	*
	Highly informal	*

TF= Target forms are shown by asterisk (*).

Other features included in the table are types and levels of formality. With respect to the type of RC, both RC types were targeted in the instructional material, with defining RCs constituting a larger part of the material (70%). This was done to elicit further discussion and give variation to the items.

According to Pincas (1982), the distinction between formal and informal language is a matter of degree. It can be seen as a range of possibilities from the *most informal* at one end, through *neutral* all-purpose style in the middle, to the *very formal* at the other end (Pincas, 1982). These levels of formality influence the structure of the RCs in English.

As Carter and McCarthy (2006) have explained, in formal styles, the preposition may be placed immediately before the relative pronoun and in a more informal style, it may follow the RC. The same source adds that 'zero relative pronoun can also occur as the complement of a preposition, but only if the preposition is placed at the end of the RC' (*ibid*: 573). Since the learners in the present study do not work on highly formal texts, the informal features of RCs were targeted.

4.4 The structure of relative clauses in English and Farsi

The processing of simple sentences does not pose as much difficulty as that of complex sentences. English RC represents a complex structure with long-distance dependency. In order to comprehend a sentence with an embedded RC, the learner must know, firstly, how each word fits into the sentence structure; secondly, what the function of the relative pronoun is and, finally, which word is being modified. In this section, certain features of RC structure in English and Farsi will be presented and discussed.

4.4.1 Relative pronouns in English

English is an SVO language. According to Celce-Murcia and Larsen-Freeman (1999: 571), an RC is 'a type of complex post-nominal adjectival modifier used in both written and spoken English'. An important characteristic of English RC is having 'a pronoun within RC with the same reference as the domain noun' (Odlin, 1989: 99). The RC gives detailed information about the modified entity. English RCs are commonly introduced by such pronouns as *who*, *whom*, *that*, *which* and *whose* (Swan, 1980). The choice of relative pronoun depends on whether the clause modifies a human or non-human head noun and on the grammatical function of the relativised noun inside the RC (*i.e.* subject, object, possessive). It further depends on whether the relative clause is defining, non-defining or sentential[5] clause. Following the same rule, English speakers use relative pronouns *who* for human and

[5] According to Carter and McCarthy (2006: 566) sentential relative clauses give comments on 'a whole sentence or series of clauses, or a speaker turn, or a longer stretch of discourse'.

occasionally pet, *whom* for only human and *which* for non-human antecedent noun phrases. *Whom*, the object relative marker which is very formal is more frequently used in writing than speech (Carter and McCarthy, 2006). It is sometimes replaced by *who* or *that*, or is omitted completely, depending on the context (Swan, 1980). *Whose* is used as a relative pronoun for both human and non-human antecedent noun phrases.

(4)

a) *The man whose* car was stolen was my teacher.

b) *The house whose* door was broken was robbed last night.

In more formal style, whose can be replaced by a determiner + noun + of which. See the example below adopted from Carter and McCarthy (2006).

(5)

a) He wrote one novel, *the title of which* I've forgotten.

Among these relative pronouns, *who*, *whom* and *which* can be replaced by *that*, which is very common in spoken English. In English, sometimes a preposition precedes the RC and the relative pronoun is the object of the preposition. In formal English, the preposition is placed before the relative pronoun in an RC. In this case, the RC pronoun must be either *whom* or *which*. *That* never appears together with a preposition in formal English and the RC pronoun cannot be omitted.

Another widespread use of the preposition in informal English is to move it to the end of the clause (Thomson and Martinet, 1980). In this case, the preposition appears in a canonical post-verbal position and its complement noun phrase is replaced by *who*, *whom, which* or *that,* and appears in a pre-verbal position. As mentioned above, this structure is more common in spoken and informal English.

Finally, in informal styles especially in spoken English, it is possible to delete the relative pronoun that replaces an object or object of a preposition altogether, except where 'the preposition has not been fronted along with the relativized object' (Celce-Murcia and Larsen-Freeman, 1999: 581).

4.4.2 Relative pronouns in Farsi

To understand the processing problems of Farsi learners, it is necessary to address the properties of their native language grammar, such as pro-drop, head direction, and RC markers (Juffs, 2007). Farsi has a dominant SOV word order. The verb almost always appears in the sentence-final position and is marked for tense, aspect and person (Megerdoomian, 2005).

(6)

a) (mæn) yek fæsl-e digær nevesht-æm.
b) (I) one chapter more wrote.
c) I wrote one more chapter.

The subject of the sentence is sometimes omitted in everyday conversation, as in sentence 6. However, the sentence is not completely subjectless, since it is denoted in the suffix of the verb (*æm).* Although the canonical word order is SOV, the verb can sometimes appear in the initial or middle positions of the sentence for emphasis in informal speech.

Like English, Farsi is head-initial and places RCs postnominally. The embedded clause is introduced by the complimentiser *ke* in the clause initial position, regardless of the animacy and function of the head noun (Megerdoomian, 2005). In other words, all types of relative pronouns for human, non-human, subject, object and possessive cases are identified by *ke*. Unlike English, which allows the omission of the relative pronoun, Farsi does not permit an RC without *ke* (Taghvaipour, 2004).

(7)

a) *Ketab-i [*mæn donbal-esh migæshtæm*] dar ketabxane bud.
b) The book [*I was looking for*] was in the library.
c) Ketab-i [**ke** *(mæn) donbal-esh migæshtæm] dær* ketabxane bud.
d) The book [***that** I was looking for*] was in the library.

As the asterisk indicates in sentence (a), it is not possible to use an RC without relativiser in Farsi, whereas both sentences (b) and (d), with or without *that*, are acceptable in English.

Another feature of Farsi RCs is the retention or resumption of the pronoun. Although the complimentiser */ke/* is introduced in the clause initial position, the coreferential noun phrase within the embedded clause is retained in a pronominal form. As Table 4.2 shows, a resumptive pronoun is kept in all relativised positions except for subject in Farsi.

Table 4.2 Patterns of pronoun retention (adopted from Keenan and Comrie 1977)

Language	SUBJ	DO	IO	OBL	GEN	OCOMP
English	—	—	—	—	—	—
Farsi	—	(+)	+	+	+	+

(+) = pronoun retention; (—) = non-retention of pronoun

While in the *direct object* position, the presence of the resumptive pronoun is optional, in the *remaining* positions, it is obligatory. Examples of each position are presented below:

(8)

a) SU mærd-i [*ke amæd]* ræis-æm bud.
Man-the [that *came*] boss- my was.
The man [*who came]* was my boss.

b) DO ketabi-i ra [*ke diruz xæridæm*] gom shod.
Book-the object marker [that bought-I yesterday] lost was.
The book [*that I bought*] yesterday was lost.

c) DO in ketab-i æst [*ke mæn **an** ra diruz xæridæm*].
This book-the is [*that I **it** (object marker) yesterday bought*].
This is the book [*that I bought yesterday*].

d) OP mærd-i [*ke shoma az **u** pul gereftid*] æmu- yæm æst.
Man-the [*that you from **he** money get*] uncle-my is.
The man from [*whom you get the money*] is my uncle.

e) GE mærdi [*ke pirahæn-e **u** sefid æst*] Bæhram æst.
Man-the [*that shirt of **he** white is*] Bahram is.
The man [*whose shirt is white]* is Bahram.

f) OCOMP Keshværi [*ke Iran æz **an** kochektær æst]* Chin æst.
Country-the [*that Iran from **it** smaller is*] China is.

The country [*that Iran is smaller than*] is China.

All resumptive pronouns are shown in bold type both in Farsi and in English translation. In sentence (a), the head noun is in subject position in the embedded clause, so no resumptive pronoun is needed. In examples (b) and (c), the relative pronoun is the direct object of the RC, and both omission and retention of the pronoun in these positions are allowed. In sentences (d), (e) and (f) the resumptive pronoun is essential.

According to Megerdoomian (2005), the use of the resumptive pronoun in Farsi usually occurs when the head noun is separated from the RC by an intervening verb. For example, in sentence (c) the head noun *ketab* has been separated from the RC [*ke mæn* ***an*** *ra diruz xæridæm*] by the verb æ*st*.

Another reason that may account for the retention of pronoun in Farsi might be disambiguation. In example (9) below, the provision of resumptive pronoun is necessary to distinguish SU from DO relatives.

(9)

a) SU	mærd-i [*ke zæn ra did*]
b)	Man-the [*that woman (obj-marker) saw*]
c)	The man [*who saw the woman*]
d) DO	mærd-i [*ke zæn* ***u*** *ra did*]
e)	Man-the [*that woman* ***him*** *(obj-marker) saw*]
f)	The man [*who the woman saw*]

Since Farsi is an SOV language, the word order for both SU and DO relatives are the same, with the verb occurring at sentence-final position. By comparing word-for-word translation of (a) and (d), we notice that SU and DO relatives (in sentences (b) and (e)) are identical in clause elements and word order, except for the pronoun *him*, which is kept in sentence (e). The retention of *him* is essential to identify the referent of the pronoun *that* and to prevent ambiguity.

4.4.3 Defining and non-defining RCs in English and Farsi

As shown in Table 4.1, RCs are divided into two types: *defining* and *non-defining* clauses. Defining RCs are necessary for sentence meaning in that they restrict the reference of the main noun and provide essential information to identify the subject or object of the sentence. Non-defining RCs provide additional information about the antecedent noun phrase, 'which is not needed to identify the person, thing, or group' (Sinclair, 1990: 363). They are set off from the rest of the sentence with commas in *written* English, and are distinguished by intonation and pausing in *spoken* English.

(10)

a) John wrote the book *that is about ancient civilization*.
b) John wrote a book, *which was very exciting*.

In sentence 10 (a), the RC defines the antecedent noun phrase the book; it tells us exactly which book is meant (*the one that is about ancient civilization*) and therefore, is a defining clause. The clause in 10 (b) modifies an indefinite antecedent (*a book*); it does not help to make it definite, but gives extra information describing it, (*it*) *was very exciting*. The difference between defining and non-defining RCs can be examined by 'separability test' (Bernardo, 1979). The main clause in sentence 10 (b) can stand alone and convey the meaning to the hearer, while the main clause in sentence 10 (a) cannot stand by itself and convey the necessary meaning.

Another distinction between defining and non-defining RCs in English is in the use of relative pronoun. While defining RCs are introduced by either a relative pronoun (e.g., *which* or *that*) or a gap (*i.e.* omission of the relative pronoun), non-defining RCs always include a relative pronoun (Quirk *et al.*, 1985). *That*, as a relative pronoun, can not be used in non-defining RCs. According to Hurford (1994: 219), 'the relative pronoun can be omitted altogether anywhere where 'that' can be used, except when the 'shared' position inside the RC is the subject position'.

Defining RCs in Farsi are distinguished from their non-defining counterparts by comma, intonation and the suffix *-i*.

(11)

a) Non-Def	Asb-ha,*[ke sefid hæstænd]*, ziba hæstænd.
b)	Horses, *which are white*, are beautiful.
c) Def.	Asb-ha-i [*ke sefid hæstænd]* ziba hæstænd.
d)	The horses *[which are white]* are beautiful.

Sentence 11(a) contains a non-defining RC, which is set off from the remaining parts of the sentence by two commas. It implies that all *horses* are *white.* In sentence 11 (c), the defining RC implies that the *white horses* in question are distinguished from some other *non-white horses*. With regard to the choice of relative pronoun, Farsi speakers do not distinguish between defining and non-defining relative pronouns and for both forms, they apply the same relativiser /ke/.

4.5 Possible problems in learning English relative clauses

The structure of the RCs in English represents a long-distance dependency and requires a deep level of processing that involves detection, elaboration and integration with the previous knowledge structure (Izumi, 2002). English and Farsi differ in RCs in various ways and this may add to the problems of Farsi learners in learning this structure. Gass (1983) refers to five dimensions along which RC formation varies among the languages of the world:

(1) Adjacency to the head noun
(2) Occurrence or non-occurrence of RC marker
(3) Position of RC with respect to the head noun
(4) Case markings on the relative marker (variable or invariable)
(5) Pronoun retention or omission.

Among these dimensions, English and Farsi do not differ in categories (1) and (3); that is, both languages require the relative marker to be adjacent to the head noun and place RCs postnominally. However, they differ in three ways. While English allows

omission of relative markers such as *that,* Farsi does not allow the omission of *ke* in any circumstances (2). Furthermore, as mentioned before, English uses various forms for relative markers (e.g., *who*, for subject and *whom* for object), whereas Farsi does not distinguish nouns in terms of their animacy or grammatical case (4). Finally, Farsi allows retention of pronouns in the RCs but English does not (5). Considering these differences, three major problems have been frequently reported in Farsi learners' performance by English teachers and some researchers. For example, in the studies on RC acquisition by Gass (1980) and Hyltenstam (1984), it was found that Farsi learners whose native language allows pronoun retention, kept pronominal copies in their productions and accepted incorrect sentences in grammaticality judgment tests. These problems are discussed in the following sections.

4.5.1 Selecting the relative marker

One major problem for Farsi learners is the selection of an appropriate relative marker. The choice of the relative marker (such as *who, whom, which, that, whose, where, when* and *why*) in English is determined by animacy (human or non-human) and grammatical function (subject, object, genitive) of the relativised noun phrase, whereas Farsi, as mentioned earlier, uses *ke* for all relative pronouns. *Ke* is usually converted to *that* in spoken and written English by Farsi learners. This might be because, in Farsi, *ke* functions more similar to subordinating conjunction rather than a relative pronoun (Lazard, 1957, cited in Odlin, 1989) and learners may attribute the same function for *ke* realised in noun clauses like *I think that* in relative clauses like *the man that*. So, it can be anticipated that Farsi learners may use *that* more frequently than other relative markers in English. For example, in sentence 12 (b) (an invented example), due to transfer from L1, a learner may use *that* plus a possessive pronoun *his* instead of the relativiser *whose*.

(12)

a) Mærd-i [***ke mashinæsh ra dozdidænd]*** moællemæm bud.

b)*The man [***that his*** *car was stolen*] was my teacher.

c) The man [***whose*** *car was stolen*] was my teacher.

4.5.2 Pronoun retention

Farsi learners tend to produce English RCs with resumptive pronouns (Gass, 1979, Hyltenstam, 1984). In the process of producing L2, Farsi learners may assume English is like their native language and formulate their structures on the basis of L1 strategies, providing a resumptive pronoun in the RC, to compensate for the presumed inadequacy of the relative pronoun *that*. The following sentence illustrates this problem:

(13)

a) In ketabi æst [***ke (mæn) an ra diruz xæridæm***]

b) *This is the book [***that I bought it yesterday***].

4.5.3 Non-adjacency

A third problem may arise due to the difference between the word order of English and Farsi. With its SOV word order, Farsi must keep the verbs in the sentence-final position. As long as the sentences are simple in English, the learners may not have much difficulty in comprehending or producing them. However, when the structures are more complex, for instance, with centre-embedding of RCs in English, the production of these sentences becomes problematic for Farsi learners. Take the following example:

(14)

a) [John read the letter [*that Mary wrote to [Sara]* whom John loves]]].

b) *[John name-i ra [*ke Mary bæraye Sara [ke John* ***ashege ust] neveshte bud***] **khand**].

c) [John letter-the [that Mary to Sara [that John **loves**] **wrote**] **read**].

According to Slobin (1973), the greater the separation between the related parts of a sentence, the greater the tendency that the sentence will not be adequately processed. This is clear in the sample sentence above. In translating sentence (a), the learners tend to move all verbs to the sentence-final position producing sentence (b) in Farsi,

where the constituents of the main clause, *i.e.* subject (*John*) and object (*name-i ra*) are separated so far away the verb (*Khand*) that the sentence is incomprehensible.

Non-adjacency of relative pronoun and the head noun may also occur when learners combine two simple sentences as illustrated in the following sentence:

(15)

a) Knowledge is collected by scientists. Knowledge is cumulative.
b) **Knowledge* is collected by scientists [*that is cumulative*].
c) Knowledge [*that is cumulative*] is collected by scientists.

The incorrect structure in (b), which is frequent in learners' productions, occurs when they conjoin the two sentences by simply adding a relative pronoun (*that*) to the initial part of the second sentence, without embedding the RC into the main clause. This seems to be compatible with the predictions of the PDH. In this case, learners may follow the same strategy as when producing compound sentences, for example, by joining two simple sentences with conjunctions like *and, so* and *but*. In other words, they may not distinguish between coordinate and subordinate clauses.

4.6 Summary

In this chapter, some of the linguistic and cognitive principles underlying the RC structure have been reviewed. To establish a sound theoretical basis for choosing target linguistic forms, four major hypotheses proposed for the order of acquisition of the RCs in previous literature were discussed briefly. Following the predictions of the NPAH, the present study focuses on SU, DO, OP relatives in practice session, as they represent the easiest structures. In addition to these forms, the material for testing sessions includes GE relatives. We observed that English and Farsi, although similar in some aspects such as post-nominal positioning of RCs, differ in others. In the light of the considerable differences between Farsi and English RCs, it can be anticipated that learners will negotiate in those areas of difference. As a result, their collaborative discussion could reveal their internal hypotheses about English RCs and the extent to which they may carry their L1 knowledge to English. Furthermore,

by administration of a test including these four types of RC at the beginning of the treatment session, it might be possible to establish an order of difficulty (perhaps the NPAH) in producing and comprehending English RCs. Finally, a repetition of the same test at the end of their treatment can show us if they follow the NPAH prediction in learning English RCs.

CHAPTER 5

Methodology

This chapter begins by presenting the questions and hypotheses and the procedure followed in collecting and analysing the data. Several steps were taken which involved designing two sets of material for treatment and testing sessions, piloting the material and tests, pre-testing and post-testing the participants and audio-recording pair-talk during interaction. Following that, the tape-recorded data were transcribed and translated into English. Then, a framework was established for coding *language-related episodes* (LREs) in the spoken data. Finally, instances of LREs were identified and analysed in terms of *type*, *value, nature*, and *outcome*. These stages will be discussed in the following sections.

5.1 Research questions

The present thesis aims to provide an insight on how *output* activity type might affect the learning of a linguistic feature in English language. In accordance with the objectives of the study, the following questions are addressed:

1. (a) Do learners working collaboratively on the *more Meaningful* output activities involving English relative clauses make more progress in that area than learners working collaboratively on the *more Mechanical* output activities?

1. (b) Do the results of the overall test scores support the predictions of the Noun Phrase Accessibility Hierarchy?

2. Do learners working collaboratively on the more Meaningful output activities produce more

a) language-related episodes

b) meaning-based episodes

c) weighty episodes

d) continuous episodes
e) correctly-solved episodes than learners working collaboratively on the more Mechanical output activities?

The third research question is concerned with the relationship between the learners' progress (addressed in the first question (1a)) and their discussion during the completion of the activities (addressed in the second question (2a)).

3. Is there any relationship between the acquisition of English relative clauses (as measured through the gain scores of the learners) and the learners' discussions during the completion of the activities (operationalised as the number of LREs)?

5.2. Research Hypotheses

If the *more Mechanical* activities engage the learners in practising only the *forms* of language without any attention to meaning, this might have some consequences. One consequence is that they might switch off the *form-meaning* connection and perform the drill without sufficient thinking, which is necessary for processing input and internalising intake. On the other hand, the context of production in the *more Meaningful* activities might induce learners to use the target linguistic forms to express their intended meaning. Thought-provoking activities may stimulate their internal linguistic processing to move from the *conceptualiser* to the *formulator* (in Levelt's terms). In other words, they may follow the natural process of language production, by first inventing the message and then putting their message into words. This *form- meaning* connection might have some contributions for learning. Based on this speculation, I propose the following hypothesis:

1. (a) The *Meaningful* output activities will have a greater effect on learning English relative clauses than the *Mechanical* output activities ($p<.05$).

With respect to the order of difficulty based on the predictions of the NPAH, I propose the following hypothesis:

1. (b) The results of the overall test scores will support the predictions of the Noun Phrase Accessibility Hierarchy.

The next hypotheses are formulated according to the speculation that the meaningful production of language engages learners in a deeper level of processing, involving negotiation about the meaning and form-meaning connections. This may provoke considerable discussion of the meaning-based features of the language in the Meaningful output activities and may result in differences in various LRE features. Thus, the next research hypotheses predict that:

2. The Meaningful output group will produce more
a) language-related episodes
b) meaning-based episodes
c) weighty episodes
d) continuous episodes
e) correctly-solved episodes than those produced by the Mechanical group ($p<.05$).

The third hypothesis is proposed with respect to the relationship between the learners' discussion during the completion of the activities and their performance in the post-tests:

3. There will be a positive relationship between the acquisition of English relative clauses and the learners' discussion during the completion of the activities ($p<.05$).

5.3 Design of the study

The purpose of the present study is to investigate the effect of output activity type on the learning of a grammatical form in English. The study focuses on English RCs targeting SU, DO, OP and GE relatives. The participants in the study consisted of 36 students who were attending two intact classes in low intermediate level. The classes were randomly assigned to one of the two groups: a control group (A) to work on the Mechanical activities and an experimental group (B) to work on the Meaningful

activities. Each group completed three activities in three fortnightly sessions. To obtain the process data, learners in each group were assigned to pairs and were tape-recorded while interacting with each other to accomplish the activities.

The activities that the learners completed between the pre-test and the post-test were across a continuum ranging from more controlled and Mechanical activities including *substitution*, *transformation* and *text development* to more Meaningful activities including *picture description*, '*let's complain*' and *dictogloss*. The activities were designed to elicit the production of three types of English RC (SU, DO, OP). In order to determine the effectiveness of the activity type on learning English gelatinization, three tests were developed: a test of *translation from Farsi (L1) to English (L2)*, a *sentence combination production* test and a test of *translation from English (L2) to Farsi (L1)*. These tests were administered in two sessions: prior to the treatment (pre-test) and after the treatment (post-test).

After completion of each activity, I collected their completed worksheets together with the input page and gave them to the learners after correcting in the next session. This procedure was followed throughout the sessions for all pairs. At the start of the next session (2 and 3), I provided feedback in written form, underlining all the erroneous RC structures and providing the correct forms. Sometimes, when the learners were reluctant to review their handouts, I approached them and drew their attention to the problematic areas by asking such questions as *do you have any mistake*? Or *why did you write this*? Furthermore, I answered the questions that arose during the feedback sessions. To reduce the variation in the information given to the pairs, I anticipated a series of questions and provided a number of fixed responses to them.

5.4 Participants

The data were collected from 36 Iranian learners studying English in a private language school in Tehran (*Ayændesazan*) during summer 2006. They were all females within the age range of 15 to 28. All of them were enrolled in an intensive

English programme, which had several levels of instruction, ranging from beginners to advanced level of proficiency. The new students were placed in a level based on a placement test which comprised various sections on grammar, vocabulary and the four language skills. Subsequent placement was determined by successful completion of the course. Each class met twice a week for a total of 10 weeks and each session lasted 2 hours. The course book was *New Interchange* (Richards, *et. al,* 2000) which provides practice on reading, listening, writing and grammatical features of English. The lessons had a predetermined focus on grammatical features with the structure of RCs being studied in intermediate level classes (Book 3: lessons 9 — 12). Therefore, the data for this study had to be collected from the learners (i.e. low intermediate level) who were not scheduled to receive instruction and practice on the target form for the duration of the study. They had acquired the basic knowledge of the structure of RCs at high school but were some way from the final stage of acquisition.

The learners were initially informed that the activities and tests did not constitute any portion of their course grade. Prior to the study, they signed consent forms to agree to participate in the study and allow their recorded voice to be used (Appendix 1). As two of the learners were below sixteen, their parents were asked to sign the permission forms allowing them to participate in the study.

5.5 Experimental schedule

The present study focused on two sets of output activities: Mechanical and Meaningful. A combined methodology was used to determine the effectiveness of the activities in the acquisition of English RCs. This consisted of collecting both process (through tape-recording pairs of learners separately) and product data (through pre-testing and post-testing the participants). This methodology provided substantive information about the learning process and interaction between the learners. The general design of the study is illustrated in Table 5.1.

Table 5.1 Design of the study

Group A (control)	Group B (experimental)
More Mechanical output	More Meaningful output
n= 18 persons (9 pairs)	n= 18 persons (9 pairs)
Pre-test	Pre-test
Baseline	Baseline
3 Sessions	3 Sessions
Interaction and tape-recording	Interaction and tape-recording
Post-test	Post-test

The study was carried out over a period of eight weeks and involved a pre-test, a baseline test, three practice sessions and a post-test for each group. The participants received three sessions of treatment, which took place over a six-week period. The timetable for delivering the treatment is presented in Table 5.2. As illustrated in this table, each week was devoted to one group of participants in either the Mechanical or the Meaningful group. After the pre-testing session, two classes of learners were randomly assigned to two Mechanical and Meaningful groups.

Table 5.2 Timetable for delivering the treatment and tests

Week	Activities
Week 1	Pre-test and Baseline activity (18 pairs recorded separately)
Week 2	Session 1 Group A (9 separate pair recordings) did activity 1A
Week 3	Session 1 Group B (9 separate pair recordings) did activity 1B
Week 4	Session 2 Group A (9 separate pair recordings) got feedback on activity 1A and did activity 2A
Week 5	Session 2 Group B (9 separate pair recordings) got feedback on activity 1B and did activity 2B
Week 6	Session 3 Group A (9 separate pair recordings) got feedback on activity 2A and did activity 3A
Week 7	Session 3 Group B (9 separate pair recordings) got feedback on activity 2B and did activity 3B, got feedback on activity 3 B
Week 8	Group A received feedback on activity 3A, Post-test administered in two groups

It is also worth mentioning that the two classes were homogeneous in their knowledge of English relative clauses. Further reflection on the pre-test scores, later during the analysis of data, revealed that half of the learners (50%) scored above the mean (high scorer) and the other half (50%) scored below the mean (low scorer) in each group. The participants in each group were asked to choose their partners as they were going to work in pairs. They were not informed of their partners' or their own score levels before and during the practice sessions. Following that, pairs of learners were requested to come to school sometime (half- or one hour) earlier than their class time. After making arrangements with the learners, I handed the weekly timetable to the head teacher of the school to arrange for a spare room at those times. Meanwhile, I obtained the learners' contact details to remind them of their schedule the day before each session. In cases where one learner was unable to come at the prearranged time, another date was set and the other member of the pair was immediately informed of the plan.

The pair-work session started with a baseline activity. In the following weeks, pairs of learners were tape-recorded while they were completing their activities and interacting with each other in Farsi (L1). I thought that interacting in English might be difficult for the learners in low intermediate level and may affect their willingness to participate in the discussions. Furthermore, as Swain and Lapkin (2000) suggested, learners might benefit from using L1 in the collaborative output. Therefore, the learners were advised that they were free to use either Farsi or English. In order to encourage joint production, each dyad was given only one copy of the activity. The learners had no access to a dictionary or any other aid during the session. They were also asked not to refer to any textbook about RCs for the duration of the study.

To ensure the clarity of the recording and to prevent distraction from other pairs, each pair was tape-recorded separately (*i.e.* one at a time). Throughout the treatment sessions, I was present in the room checking the equipment but not intervening in the interaction between the learners. I took notes about interaction patterns (e.g., lead

taken in making decisions) and recorded the time it took the participants to complete the activity.

Previous studies suggested that providing feedback after collaborative output is necessary for elimination of errors and prevention of their transfer to subsequent learning situation. Therefore, the participants in both groups received feedback that informed them of the correct answer for their erroneous responses. More specifically, feedback indicated whether their responses were correct or incorrect. Since indicating that a response was not correct would not give them access to the correct answer, the participants were provided with correct answers. Furthermore, if the answers were not clear for the learners and if they needed further explanations, a brief explanation was supplied. Since the treatments were delivered at different times of the week and the learners might have passed information about the activities and the correct responses to other pairs, feedback was given to the participants in both groups in the next session, when all the pairs had completed the activities.

Evidence from the tape-recorded data suggests that some learners incorporated the correct target linguistic forms provided during feedback session into their developing interlanguage system. Therefore, feedback provided on the wrongly formulated rules by the researcher after the completion of the activities may have served as a source of learning and as a result, the learners may have transferred the knowledge obtained from the feedback from one session to the next.

5.6 Material and instruments

Several sets of material and equipment were prepared for this study:

a) a test of conditional sentences in English for baseline activity
b) an input sheet on the structure of RCs
c) six activities for treatment sessions
d) three tests for pre-test and post-test sessions
e) recorder, tapes and microphones

5.6.1 Test of conditional sentences for baseline study

A baseline recording was conducted to familiarise the learners with collaborative work. The activity provided some information about the patterns of interaction and learner engagement in collaborative work. After assigning the learners to pairs, they were tape-recorded for 15 minutes working collaboratively on a relatively Mechanical activity. To prevent this giving an additional chance of practice to the learners, the activity for the baseline recording focused on English conditional sentences, type I and II (Appendix 2).

5.6.2 Input sheet

The input sheet was used to draw the learners' attention to the target linguistic forms. It also served as a warm-up activity to initiate the discussion about the exercises. It contained a brief description of RC structure in Farsi, which was accompanied by relevant examples in English. The learners in each pair were provided with one copy of it at the start of each session. This page was used as a reference grammar throughout the sessions by all pairs of the learners and was collected in the end of each session (Appendix 3).

5.6.3 Material for practice sessions

Two sets of material were developed for the treatment sessions. Each set consisted of three activities, which were carried out in fortnightly sessions. They were designed to elicit the use of SU, DO and OP relatives with differing degrees of control and meaningfulness. The activities at the more controlled end of the continuum represented the Mechanical activities and involved learners in producing the target forms without necessarily knowing the meaning or function of the words. The responses were highly controlled and only one correct answer was possible for each item. The activities at the less controlled end of the continuum represented the Meaningful activities and were designed to promote constant attention to the form-

meaning relationship in production. The learners in this group had more freedom in choosing their linguistic forms than the former group.

The activities were almost the same length and had an approximately equal number of target linguistic forms. Furthermore, the estimated time on task for both groups was similar. All the instructions were given in Farsi and the learners were allowed to choose their language of interaction. In the following section, the first three activities designed for the Mechanical group are described. Following that, the three activities for the Meaningful group will be presented (see Appendices 4-9).

5.6.3.1 Substitution

To design the Mechanical activities, a number of EFL textbooks were consulted. Four types of Mechanical drill were identified in traditional textbooks. These included *repetition, substitution, mutation* and *transformation,* two of which were chosen to give practice in the structure of English RCs.

The first drill at one extreme end of the cline was substitution, which was the most Mechanical form of the production. This drill was designed to encourage learners to produce sentences based on a model. According to Dakin (1973), the simplest way to require learners to produce an utterance without paying attention to meaning is to ask them to repeat the first example as in the model. There is no need to give them the succeeding sentence in full. They can be prompted to produce further sentences of their own by being told which noun or verb they have to use in the next sentence. This procedure was followed in designing the first set of material for the Mechanical group. An example of this activity is presented below:

Make/ people laugh

Example: A clown is someone who makes people laugh.

Put out/ fire

1. A fire fighter is someone.....

The learners were provided with the main clause of the sentence as a prompt. They had to produce the RC using the words and phrases given above the picture. Both human and non-human relative pronouns were presented in two separate examples.

To attract the learners' attention and to create a similar situation to that in the *picture description* activity, the items were accompanied by colourful pictures. For each RC type, ten exercises were developed — a total of 30 for the three RC types.

5.6.3.2 Transformation

The next drill for the Mechanical group was a transformational drill, which was administered in the second session. This was designed to give practice in the structure of RCs by varying the original sentence in a predetermined way. Dakin (1973) defines transformational drills as any drill which requires changes in the word order of the sentence involving the addition or deletion of grammatical constituents. A transformation drill is one of the meaningless drills, which provides practice in changes from affirmative to negative, changes in voice from active to passive, or changes in sentence type from simple to complex or compound. Following Dakin, a transformation drill was developed to give practice in changing simple sentences into complex sentences containing RCs (Hutchinson, 1992). Again, to attract the learners' attention, the sentences were accompanied by pictures. Below is an example of this drill:

- This **restaurant** was in the city centre.(use **that/ which**)

7. This is .....
- These **people** served us. (use **who/ that**)

8. These are.....
- We ate at this **restaurant** every evening.(use **that/ which**)

9. This is .....

The prompt contained a simple sentence with the head noun in bold type and underlined. The relative pronouns to be used were included inside the parentheses. The learners had to read the sentence and produce a complex sentence using the relative pronouns inside the parentheses. Each box contained three items representing three RC types (ten boxes in total).

5.6.3.3 Text development

The last activity for the Mechanical group was text development administered in the third session (week 7). In this activity, two passages, adapted from EFL textbooks, were given to the learners with their RCs missing. The learners were required to complete the first passage using the information provided in a box with the head nouns underlined in bold type. Working together in pairs, they discussed choosing the appropriate sentences and attaching them to the text.

e. You were talking to **the girl.**
f. The **officers** looked after you.
g. She had been to **the camp**.
h. You spent **time** at the camp.

Sally:	Hello, Hannah. Who's the girl (1) .....just now?
Hannah:	Oh, that's Maire. She's the new friend (2).....

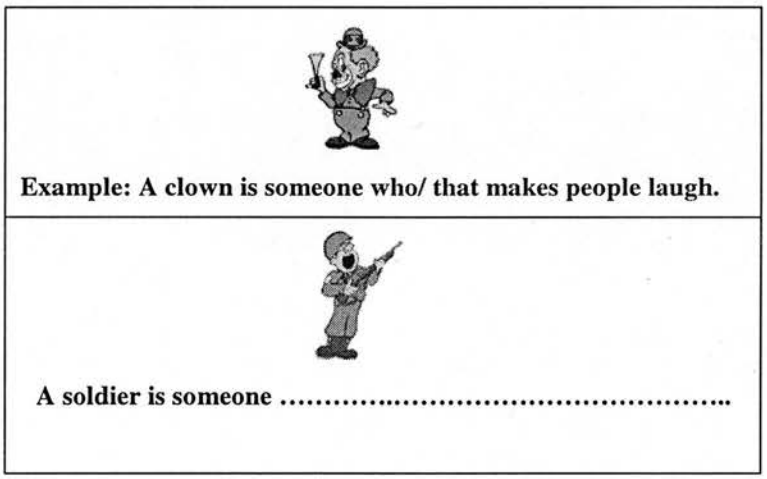
The second narrative text was the same text as was used in the *dictogloss* for the Meaningful group. The texts used for these two activities were the same in content

but different in form (written form for the text-development, spoken form for the dictogloss). Providing response to the second passage in the text development activity, which was less explicit, was more challenging than the first. The learners were given the vocabulary inside parentheses and were asked to produce an RC for each missing part. A part of this text is shown below:

> Dear Paul,
> I had a terrible birthday yesterday; nearly everything went wrong.
> The computer (1) (uncle Toby/ give).....
> broke, and the man(2) (come)..... ..... to mend it
> couldn't understand what was wrong,.....

5.6.3.4 Picture Description

In this activity, a series of pictures was presented to the learners; they were asked to look at each picture and make an RC to describe the person or the object in the picture (Chalker, 1987; Seidl, 1992). An example follows:



Similar to the substitution drill, the main clause was given but no vocabulary was provided above the item. The remaining part of the sentence was left blank and a picture was provided on the top of the item. One may argue that the only difference between a Mechanical drill (substitution) and a Meaningful activity (picture description) is on the absence of some vocabulary items. Nonetheless, it should be

mentioned that the absence of vocabulary in this activity places a high cognitive load on the learner. In order to produce a correct relative clause in this activity, the learners have to go through the following steps: (a) conception of a description for a person or an object, (b) finding lexical categories to convey the message, (c) ordering the lexical categories, (d) finding the correct relative pronoun and placing it adjacent to the head noun and (e) omitting the pronominal copy in the object and object of preposition RCs. Therefore, the two activities, although similar, place different demands on the learners' cognitive load. The length of the activity was similar to that in the substitution drill.

5.6.3.5 'Let's Complain'

This activity was intended to give practice in the structure and function of the RCs. Following Ur (1988), the learners were told that they were going to have a complaining session and they had to complain about the things that bother them. Since brainstorming and finding a topic to write about would take some time, I suggested topics such as people, problems, surroundings, courses, homework and equipment (Murphy, 1985). In order to clarify the target structure, one example sentence for each RC type was presented at the beginning of the activity. Unlike the previous activity, the main clauses were not supplied for the items so the learners were required to structure their sentences (both main and RCs) using the words provided in the items. Similar to the precious activity, the provision of response was not an easy task since the learners had to think about what to say (the message at sentence level) and how to say it (ordering their clauses, applying a relative pronoun corresponding to the co-referential noun phrase and subject-verb agreement between the head noun and the distant main verb). An example of the items designed for this activity is presented below.

Example: The exam_ take

The exam **that/ which I took last week** was very difficult.
RC

Computer_ use

.....

5.6.3.6 Dictogloss

Dictogloss is a procedure that encourages students to reflect on their own output (Wajnryb, 1990; Swain, 1998). The activity involves the participants in listening to a text read at normal speed, and reconstructing it through collaboration. The passage used for this activity was a narrative text with a clear structure and sequence of events. It was telling the story of a girl who had several unexpected and unfortunate events on her birthday. The information included in the text was similar to the things that learners would experience in the real world (Nunan, 1993). The text was 180 words in length and contained 11 RCs. As a preventive measure, the less common vocabulary in the original text was replaced with familiar words to prevent possible problems in listening comprehension (e.g., the name *Toby* might be taken for the verb *to be*). The appositive phrases were also omitted in order to make the text smoothly read. Since the speaker in the text was a female, a female native speaker of English was recorded reading the text at natural speed, without any pause or gap between the sentences. After several tests, a recording of about one minute was made for the activity.

At the start of the third session, the pairs of learners were informed that they were going to listen to a text. They were almost familiar with this type of activity, as in their listening exercises they were required to transcribe dialogues. Following Swain (1998), they were instructed that they were going to reconstruct a text matching the content and grammar of the original text as closely as possible. After listening to the text, the learners pooled their resources to reconstruct the passage. The following steps were taken in the implementation of the dictogloss:

a) the tape was played once and the learners just listened,
b) the tape was played again while the learners listened and took notes,
c) the learners worked in pairs to write their own text,
d) the learners were supplied with the original text in written form and compared their texts with it,
e) the researcher answered the learners' questions and provided corrective feedback.

5.6.4 Testing material

The material for the testing sessions comprised three tests, each one consisting of 24 items. The tests were aimed at assessing a learner's knowledge of English RCs before and after the practice sessions, in order to determine whether they had improved on the target linguistic forms (and if there was any improvement), whether one group made more progress.

The tests were administered in a specific order based on their overt focus on the target forms. It was decided that since the test of translation from English to Farsi would expose the learners to the correct forms of RC so to prevent this giving practice to the learners, it was conducted at the end of the testing session. On the other hand, test of translation from Farsi to English with its less obvious focus on form was administered at the beginning of the testing session. The same procedure was followed in the post-test session. All the directions were given in Farsi and in written form and the participants were given 20 minutes to complete each section of the test. The complete testing material is presented in Appendices 10, 11 and 12.

5.6.4.1 Test of translation from Farsi (L1) to English (L2)

One advantage of this study was that the participants came from the same L1 background, which made it possible to use translation as a test of relativisation. According to Ur (1988: 8), translation to or from the native language 'stresses production or perception of correct forms, but involves meanings as well — though as yet unlinked to general situational framework — and cannot be done without comprehension'. Thus, the test is suitable for both Mechanical and Meaningful groups since it involves attention to both form and meaning. The participants were asked to translate a set of sentences from Farsi into English. Each sentence contained a main clause and an RC (underlined below). The 24-item test included 6 items of each RC type. The items were adapted and translated from exercises in the textbooks developed for low intermediate level (Forsyth and Lavender, 1994; Vince, 1998).

1. من خانه ای خریده ام که بسیار کوچک است.

I have bought a house that/which is very small. [Expected response]

.....

3.6.4.2 Sentence combination test

The sentence combination test has been used in the majority of the studies of the RCs (e.g., Gass, 1979; Eckman, *et. al.* 1988; Doughty, 1991; Hamilton, 1995; Izumi, 2003b). The test items targeted four RC types including subject, direct object, object of preposition and genitive. The learners were given an example of how to combine two sentences. Then, they were asked to combine the sentences, beginning their combined sentence with the first sentence. They were told not to use conjunctions such as *because*, *and*, *but* and *or*.

1. Your brother saw the girl.
   The girl handed the pencil to me.

Your brother saw the girl who handed the pencil to me. [Expected response]

.....

5.6.4.3 Test of translation from English (L2) to Farsi (L1)

Translation from English (L2) into Farsi (L1) was used as a test of comprehension. Twenty four sentences, including six samples of each RC type, were designed to be administered at the third phase of the testing session. Similar to Test A, the items were adapted from exercises in low intermediate textbooks. A sample item is presented below:

1. Food which is fresh contains more vitamins.

غذایی که تازه است ویتامین های زیادی دارد. [Expected response]

.....

5.7 Piloting the material and tests

To determine whether the material had the potential to improve the learning of English relativisation, all six activities were piloted with two pairs of learners of a similar proficiency level. They were first pre-tested and then were assigned to work in pairs on either the Mechanical or the Meaningful activities. After completing all three activities in three consecutive days, they took the post-test in the fifth day. The gain scores obtained for the learners (n=2) working on the Mechanical activities were 11 and 13 and for the learners (n=2) working on the Meaningful activities were 10 and 18. After confirming that gains could be made after using the practice material, the main study was started.

Piloting the material also revealed that for some activities, particularly for the *text development* and '*let's complain*', giving instructions in written form was not adequate and the learners would ask for further clarifications. Therefore, to prevent variation in the directions given to the pairs of learners, a set of directions with the same examples were written on a page, and at each session, orally delivered to all pairs.

The initial test consisted of 40 items, of which 16 were excluded after piloting with native speakers of English at the University of Edinburgh. Those items that received a wide range of responses (e.g., eight types of response) from the native speakers were excluded from the test because it was likely that non-native participants may also produce various responses for those items and this would make them difficult for the researcher to score. Twenty four items were included in the final draft of the sentence combination test. These items were randomly ordered on each sheet. Following that, the three tests were piloted with native speakers of Farsi in Tehran. Sixteen learners of English completed the tests without being given a time limit. After observing the time these learners took, an average time limit of twenty minutes for each test was estimated. The difficult vocabulary in the tests was replaced with easy items and the following reliability coefficients were obtained for the tests:

Table 5.3 Reliability coefficients for the three tests

Tests	Alpha
Test A: Translation from Farsi into English	.688
Test B: Sentence combination test	.833
Test C: Translation from English into Farsi	.786

Table 5.3 shows strong reliability coefficients for tests B and C and a relatively average reliability for test A.

5.8 Instruments for audio-recording

Audio-recordings were made using Sony cassette recorder WM-GX 410 and Sony ZX and EF cassettes. A microphone was attached to the scarf of one of the students in each pair. Although they were aware of being tape-recorded, their interaction and oral discourse appeared to be little affected by the presence of the tape-recorder.

The setting consisted of a teacher's desk and two chairs. Each session included snacks and a container of orange juice. Due to the hot weather in Tehran (between 38 and 44 Celsius in summer), the air conditioner was working all the time. In one of the classrooms, it made a loud noise which had slightly affected recording. To increase the quality of the recording, the room was changed and the rest of the recordings were made in a different room. A total of 32 hours of recordings was obtained from 72 sessions.

Pairs of learners differed in their voice clarity and volume. Some pairs spoke loudly and clearly, while others needed to be constantly reminded to speak as loud as they could. Great care was taken to ensure that the whole conversation was recorded. For this reason, the tapes were checked after 10 seconds of recording. To prevent distraction — e.g., some learners were asking their partners *do I look good*, or some others were worried that their hair might be seen and were frequently touching their head scarves — only one or two minutes of video-recording were made from those pairs who gave the permission to be video-taped.

5.9 Analysis of the tape-recorded conversations

The data for this study included the transcribed audio-recorded pair-talk, the written handouts of the learners in each session and the pre-test and post-test papers. Other sources of data are the notes taken by the researcher during the observation of the learners. The next stages were followed in preparing and analysing the tape-recorded material.

5.9.1 Stage one: Transferring audio-recorded tapes onto memory cards and DVDs

The first task was to convert all the tapes onto memory cards. Since the tapes were not recorded in a studio, there was a lot of noise from the street traffic, construction workers, choral reading of students and movies played in nearby classes. To increase the quality of the tapes, the noise was reduced in the language laboratory of the University of Edinburgh. After cleaning all the tapes and obtaining a better quality, they were transferred onto DVDs.

5.9.2 Stage two: Transcription of recorded speech

Transcribing the spoken discourse required considerable time and effort. The sessions were transcribed in full, using foot pedals to control such activities as starting, stopping and playing back the audio files while the hands were left free to type the speech of the learners. This speeded up the work compared to the use of ordinary playback machine, which some other researchers have used.

Nonverbal actions including pauses, laughter, emphasis, incomplete sentences, feedback words and sounds such as *uhm, huh, umm, aah, hmm* and *yes* were represented in the transcripts. A list of transcription symbols, adopted from Allwright and Bailey (1994) is presented in Appendix 13. The transcripts were identified by the name of the participants, their group and the number of the session they were attending. To preserve the anonymity of the participants, they were given pseudonyms. Appendices 20–91 present the complete transcripts of the pair-talk.

5.9.3 Stage three: Translation of L1 utterances into English

A sample of the translated material was presented to a native speaker of English in order to find out whether word for word or free translation was preferable. After careful examination of the sample, it was decided that a free translation would yield a better understanding of the spoken discourse.

Apart from the decision on the method of translation, a number of aspects of spoken data had to be taken into account. Firstly, Farsi allows interrogative sentences both by using canonical word order (SOV) with rising intonation (e.g., t*o umadi* meaning 'you came') and by subject-verb inversion with (or without) question word in the sentence-initial position (e.g., *Koja rafti to* meaning 'where did you go'). Rising intonation with canonical word order might also serve as a request for confirmation, which is considered a determining factor in marking the episodes. Therefore, it was necessary to consider both forms (use of question word and rising intonation) and indicate them by different symbols. The utterance with rising intonation, serving as a request for confirmation, was kept intact and an upward arrow (↑) was used at the end of the sentence in English. The utterance functioning as a question, for which the person anticipated a response, was translated into a question form with inverted word order with a question mark (?) in the end of the sentence.

Secondly, Farsi speakers use a lot of *vague* language for expressing their intended meaning in speech. For example, the word *cheez*, meaning *thing* in English, was frequently found in the Farsi learners' discourse. This word can replace any part of speech including subject, verb and object in a sentence. Sometimes learners use it to gain time in searching for the intended word. They may also leave the sentence with *cheez* without providing the specific word when they realise that their interlocutors have understood their message. In translating this word, it was necessary to consider the speakers' intended meaning, which was possible to understand in some cases but not in many cases. Therefore, it was decided that the word *cheez* should be translated into *thing* in English and typed in italic form.

5.9.4 Stage four: Identification and categorisation of LREs

The transcripts were analysed for the occurrence of LREs. According to Swain (1998: 71) an LRE is 'any part of a dialogue in which students talk about the language they are producing, question their language use, or other- or self-correct'. Based on this definition, Swain did not make any distinction between self- and other-corrections; they are both instances of LRE. However — as Fortune (2005: 25) has pointed out — 'since LREs are identifiable units of a collaborative activity, self-corrections are not treated as episodal'.

Nonetheless, it should be mentioned that not all self-corrections are non-collaborative activity. In the transcripts of the pair-talk in the present study, two types of self-correction were identified, one of which can be considered collaborative and therefore, episodal. In one type, a learner self-initiates and self-corrects herself in a continuous utterance. Since there is no interaction between the two learners, this type of self-correction is not regarded as LRE. The other type of self-correction occurs when one learner is prompted by her peer to self-correct her utterance. This prompting normally occurs by the interlocutor's repetition of the speaker's utterance with rising intonation (i.e., recast), which is followed by editing or correcting of the utterance by the speaker. It is this latter type which is considered as episodal in the present study.

In addition to the identification and quantification of LREs, they were coded in terms of type, nature, weight and outcome. These last four categories will be discussed in the following sections. Meanwhile, the framework together with the definition and examples for each category is presented for overview purposes in Appendix 14.

5.10 Type of episodes

A framework for coding LREs was developed after three refinements. The major categories were adopted from previous papers investigating LREs in collaborative output (e.g., Kowal and Swain, 1994). These included grammatical, meaning-based, orthographic, discourse and identification. Once the major categories were

established, the sub-categories emerged from the data. In the next step, two sample sessions were carefully analysed in order to determine whether or not those categories occurred in the data. Further investigation of the sample data revealed that more sub-categories, particularly for the grammatical episodes, were required in order to describe the data. These were incorporated into my framework.

5.10.1 Grammatical episodes

The grammatical episodes constituted those parts of the interaction in which learners discussed syntactic and morphological features of their language. These episodes were subdivided into categories involving RC structure (G1—G8), categories involving verb forms (G9—G12) and other categories (G13—G18). Table 5.4 shows the grammatical sub-categorisation in the main framework.

Table 5.4 Grammatical episodes

G1	Choice of relative pronoun	**G10**	Verb tense/aspect
G2	Choice of RC	**G11**	Auxiliary + verb
G3	Formulating a clause	**G12**	Verb form: passive/active
G4	Omission or retention of the noun/pronoun	**G13**	Choice of preposition
G5	Choice of defining/non-defining clause	**G14**	Use of definite/indefinite article/demonstrative adjective
G6	Clause position: right-embedded or centre-embedded clauses	**G15**	Gerund or infinitive
G7	Finding the referent of the relative pronoun	**G16**	Conjunction
G8	Word order	**G17**	Genitive 'S
G9	Subject-verb agreement	**G18**	Pronoun

5.10.2 Meaning-based episodes

The meaning-based episodes constituted those segments of the interaction where learners talked to themselves on semantic components of the language such as

negotiating the meaning or form of the words, clauses and the content of the sentences to be reconstructed. This category was subdivided into five sub-categories. Table 5.5 presents the meaning-based episodes with their definitions.

Table 5.5 Lexical or meaning-based episodes

M1	*Considering clause choices* They discuss and choose a clause out of two or more possible choices.
M2	*Considering lexical (vocabulary) choices* They discuss and choose a word out of two or more possible choices. The correction of a lexical item is also subsumed under this category
M3	*Word/phrase meaning* They ask the meaning of a word or phrase from each other. The typical sentence for this category is: *What does X mean?* Or *Does X mean Y?* The learners know the form but they don't know the meaning.
M4	*Vocabulary search* They search their lexicon for a specific word in English, sometimes requesting help from their partners. The typical sentence for this category is: *How do you say X in English?* The learners have a meaning in mind but they don't know the specific form.
M5	*Reconstruction of the sentence using their own words* They reconstruct the meaning of the sentence or the sentence itself, using the contextual, and background knowledge. This can be either in Farsi or in English; they want to make sure that they have joint agreement on the general meaning of the sentence.

5.10.3 Orthographic episodes

The orthographic category was subdivided into *spelling*, *punctuation* and *pronunciation*. Since the pronunciation of the words was sometimes accompanied by a request for their spelling (e.g., *what? How do you spell it?*), it was categorised under orthographic feature. Of these three subdivisions, punctuation, specifically the use of the comma, was more relevant to RC discussion, since correct application of comma required knowledge of defining and non-defining clauses.

5.10.4 Identification episodes

The identification category for the *dictogloss* was adopted from Benson, *et al.* (2005). This category involves identifying the segments of speech in the tape. The subdivisions were slightly different from the original one and included such divisions as identification of *sound* or *words*, identification of *phrases* or *clauses*, and identification of *sentences*.

5.10.5 Discourse episodes

Although most of the activities did not involve learners in connecting text elements and discussion at discourse level, a small number of discourse episodes were observed in the dictogloss. This category was mainly identified as *ordering the sentences*, in which the learners discussed the sentences or sentence parts, following or preceding the sentences they were reconstructing.

5.11 Weight of the episodes

Storch (1998) argued that although the quantification of LREs allows some comparison between tasks, such quantification reveals little information about the value or nature of the exchanges between learners, since these exchanges may involve 'mechanistic [turns], consisting of students making simple confirmation or comprehension checks or of a single word and repetitions' (*ibid.* 185). Storch, however, did not provide any guidance on how the *nature* and *value* of episodes could be categorically identified. In their categorisation of LREs, Fortune and Thorp (2001) considered these distinctive features of the episodes, *i.e.* value and nature. They similarly argued that ignoring such features in the LRE categorisation implies that all LREs are of 'equal weight'. They introduced the *value* category, which reflected 'the richness of the language learning potential of an LRE' and divided it into *weight* and *length* categories (Fortune and Thorp, 2001: 152). In their further specification, weight was defined as 'the extent to which learners appear to be involved in making linguistic decisions in the process of text construction' (*ibid*: 153). The length of the episodes constituted the number of exchanges occurring

between the learners. In the present study, it is the *weight* of the episodes which is analysed. The two subdivisions of weight are presented in Table 5.6.

Table 5.6 Value: Weight of the LREs

W	*Weighty* In this type of episode 'learners draw overtly on their knowledge of the language system or context, or justify their choices with explanation' (Fortune and Thorp, 2001: 153).
L	*Light* In light episodes, 'there is no such depth of engagement and learners seem to be relying simply on the memory of what they heard, or what 'sounds right' intuitively' (*ibid.*: 153).

5.12 Nature of the episodes

In addition to the value, the *nature* of episodes was also emphasised in Fortune and Thorp's (2001) categorisation. They proposed a fourfold classification for the nature of episodes: *continuous*, *discontinuous*, *embedded* and *overlapping*. The preliminary analysis of the data showed frequent examples of these sub-categories; therefore, this categorisation was also incorporated into the framework. Table 5.7 below provides the definition of these episodes adopted from Fortune and Thorp (2001).

Table 5.7 Nature of the LREs

C	*Continuous* If the learners discuss a language form and conclude the discussion without returning to the form later, the episode is considered continuous. 'A continuous episode remains on the same language point without any other obvious focus' (*ibid.*: 155).
D	*Discontinuous* In discontinuous episodes, the learners 'leave the point and return to it later, sometimes more than once' (*ibid.*: 155).
E	*Embedded* 'An embedded episode is necessarily preceded and followed by a discontinuous one' (*ibid.*: 156).
O	*Overlapping* 'In some instances, two or more episodes overlap'. In these episodes, within one exchange two points are dealt with. (*ibid.*: 157).

5.13 Outcome of the episodes

The final feature of the LREs identified in this study is the *outcome*, which had been considered in a number of previous studies (Swain, 1998; Storch, 1998; Leeser, 2004; Malmqvist, 2005; Storch, 2007). Based on this feature, LREs were categorised into three types: *correctly solved*, *incorrectly solved* and *unresolved*. Their definition follows:

Table 5.8 Outcome of the LREs

+ out	*Correctly solved* This category constitutes those LREs in which the problem is solved correctly by the two learners.
-out	*Incorrectly solved* This category includes those LREs in which the problem is solved incorrectly.
?out	*Unresolved* In this type of LRE, the problem is left unresolved, either because the topic of their discussion is dropped or because the pair could not reach a joint decision.

5.14 Inter-rater reliability assessment

After coding the transcribed data based on the established framework, a sample of LREs was submitted to an inter-rater reliability test. The sample consisted of two continuous extracts from two different pairs' interaction with 28 identified LREs. These two extracts together with the complete LRE framework accompanied by examples, were given to two raters, who had experience of working with spoken data in the course of their own doctoral research in Applied Linguistics. They were requested to work independently and not to discuss the decisions they made with each other. They were initially assigned to code eight LREs based on the framework. No contact was made between me and the raters until they had studied the framework and analysed those LREs. Following this trial session, we discussed the possible problems they had faced during LRE coding. The result of this discussion suggested some improvements to the framework. These suggestions were as following:

- It should be emphasised that LREs constitute those segments of speech in which learners *question*, *request* for help, *confirm* and *correct* each other's language. Using arrows to signal the exact focus of the LREs in the transcripts would help the reader to understand the focus of LREs.
- Definitions of weighty and light episodes need more clarification. Differentiating the two categories is very difficult.
- It would be better to underline the lexical and clause choices that learners are discussing.

After discussion about the framework, the raters started working on the rest of the LREs. The result of their LRE coding is presented in Appendix 15. Since the measurement was categorical and the raters checked which category each LRE falls in, instead of calculating correlation, the *percent of agreement* between the raters was obtained. The result of this analysis is presented in Table 5.9.

Table 5.9 Percent of agreement between the raters on the LRE characteristics

LRE features	Raters 1 and 2	Raters 1 and 3	Raters 2 and 3	Averaged percentage
Types	80 %	60 %	55 %	65 %
Nature	85 %	85 %	75 %	82 %
Value (weight)	—	40 %	—	—
Outcome	—	65 %	—	—

The nature of episodes showed the highest agreement percentage (82%) followed by the types of episodes (65%). One may assume that the reason for high agreement as to the nature of episodes might be the low number of sub-categories involved. While the nature of episode includes four sub-categories (continuous, discontinuous, embedded and overlapping), the type of episode constitutes 30 (grammatical: 18; meaning-based: 5; orthographic: 3; identification: 3 and discourse: 1). However, this assumption is rejected since the value of episodes, which included only two sub-categories (light and weighty) obtained the lowest agreement between the two raters (40%).

Therefore, there seems to be no relationship between the number of subdivisions under a feature and the level of agreement achieved among the raters. In fact, the difference in the agreement percentage for various categories can be explained by considering the degree of clarity of the categories and ease of making decision based on them. In other words, the more distinctive the subdivisions are under a category, the more similar decisions might be made by the raters. The evidence for this is found in the debriefing questionnaire of rater 2, who did not code value of episodes and commented that 'it is hard to distinguish' the two levels of light and weighty.

With regard to the outcome, rater 2 had provided no response for 13 (out of 20) episodes. It seems that she had more difficulty in distinguishing the sub-categories of value and outcome than those in the nature and type of episodes. Therefore, these two last categories were omitted in the calculation of the averaged percentage.

Table 5.9 also reveals a difference in the agreement percentage between the raters (1&2 and 1&3). The second column shows a high agreement between the raters 1 and 2 for both type and nature of episodes, suggesting that these raters' decisions were very similar. On the other hand, the third column, which compares raters 1 and 3, shows a lower agreement (in three cells) compared to the second column. In other words, the agreement between raters 1 and 2 was higher than the agreement between raters 1 and 3. This can be explained in two ways. The lower agreement between rater 3 and the others can be accounted for by their previous experience of working with a framework. It might be the case that rater 2 had established a framework for analysing her own research data and this might have given her some practice in coding spoken data. However, their responses to the debriefing questionnaire revealed that both raters had experience of developing discourse category frameworks and applying them for their research.

The most likely reason for the high agreement percentage between raters 1 and 2 may be found by looking at the amount of time they spent on the framework. The questionnaire revealed that while rater 2 spent her allocated time (2 hours) on studying two features (type and nature), rater 3 spent similar amount of time (2—3

hours) on four features of the LREs. Therefore, the focused attention of rater 2 may have helped her obtain a deep understanding of the framework and making similar decisions as the rater 1. On the other hand, rater 3 had distributed her attention across all four features of episodes (type, nature, value and outcome) and therefore may have obtained a more superficial understanding of the LRE categories.

5.15 Scoring the pre-test and post-test papers

In scoring the tests, the final stage of acquisition, *i.e.* the target-like use of RCs, was considered as an indication of learning. This was done for two reasons: firstly, according to the *output hypothesis,* output enhances the accuracy of production in terms of morphology and syntax and therefore, non-target like production of the intended structure can not be regarded as accurate production. Secondly, to allow for the comparison of the findings of this study with those found in previous studies on the acquisition of English RCs, a similar procedure in scoring was adopted. Following Izumi (2002), in the scoring procedure, the target-like use of the RCs was assigned 1 point and the non-target-like use was assigned 0. Setting such a criterion for scoring may appear to be unfair, since the inter-lingual responses, such as the following sentences, were regarded as 'no response' to the item. This, to some extent, lowered the level of the scores in both pre-test and post-test sessions.

a) I bought a house that *it* is very small. (pronoun resumption)
b) This is the girl *who her* mother is from Canada (incorrect relative pronoun).
c) The flowers are beautiful *that grow in the garden* (incorrect clause position).
d) The girl went to the police station *whose suitcase was stolen* (incorrect clause position).

In addition to that, the production of the particular RC that was targeted in a given item was regarded as correct. Therefore, if a learner produced a SU relative instead of an OP relative, the response was regarded as incorrect. However, if they produced the intended structure with an incorrect lexical item or spelling, or with a semantically related word, their response was assigned 1 point. For example, in the

following item, the learner produced 'follow' instead of 'look for', 'crust' instead of 'trust' and 'fill' instead of 'full of'. Since the intended structures (DO and SU) were produced, the responses were considered correct.

a) I *follow* a good doctor that I can *crust*.
b) Back my house is a park that is always *fill* dog.

As mentioned earlier, the tests targeted four types of RC including SU, DO, OP, and GE relatives. Each test was composed of six items for each RC type. These items were randomly distributed in the test papers so that they did not follow each other to give practice in a specific RC. To score each type, they were first identified in different colors: SU (green), DO (blue), OP (pink), GE (orange) in each student's pre-test and post-test papers. Next, the correct items for each RC type were quantified separately for each test and entered into a list.

5.16 Statistical treatment of the data

A number of statistical analyses will be utilised in order to answer the research questions, as well as others arising during the statistical analyses of the data. The scores of the learners will be submitted to the paired and independent samples t-test analyses to determine whether any progress has been made and whether they differ in their progress. The scores obtained from each testing measure will also be analysed using ANOVA and paired samples t-tests to find out whether the learners performed differently on receptive and productive tests. This will show us if the learners made progress in all three tests. The learners' scores on each RC type will be compared in terms of the order of difficulty (based on their mean scores) and whether the same order has been retained in the post-test. To find out whether the individual learners have followed the predictions of the NPAH, two implicational scales will be prepared. Finally, for the quantitative data obtained from pair-talk interaction, t-test analyses will be carried out on the mean number of total episodes in each category. Some correlational analyses will also be conducted to find out whether there is any

relationship between the number of LREs, the learners' progress and time spent on the activities.

5.17 Summary

This chapter presented the main features of the study including the questions, hypotheses, design and the participants. The major material composed of six activities and three tests. Several steps were followed in collecting the product and process data, namely, pre-testing, tape-recording and post-testing the learners. In the next chapter, the scores obtained from the pre-test and post-test sessions are analysed in order to find out whether or not learners have made any progress and which group outperforms the other group. In Chapter 7, the transcripts from the learners' tape-recorded interactions are analysed for instances of LREs. This should provide answer to the remaining research questions.

CHAPTER 6

Findings from the product data

In this chapter, the findings from the test scores in the two testing sessions are reported. First, the overall test scores of the two Mechanical and Meaningful groups are compared. Next, the results obtained from each testing measure, *i.e.* translation from Farsi to English, sentence combination test and translation from English to Farsi, are analysed. Finally, the scores for each RC type, including SU, DO, OP and GE, are presented and compared across the two groups of participants.

6.1 Results of the pre-test and post-test

The first general research question 1 (a) addressed the differences in the learning of English relative clauses between the two groups. To determine the effect of the output activities on their knowledge of English RCs, the learners in both Mechanical and Meaningful groups took three tests before and after the treatment. These tests were composed of 72 items. Table 6.1 presents the means and standard deviations of the overall test scores and the gains made from the pre-test to the post-test.

Table 6.1 Descriptive statistics for overall test scores: Means and standard deviations

		N	Mechanical	Meaningful
Pre-test	**Mean**	18	26.05	25.00
	SD		*10.35*	*14.91*
Post-test	**Mean**	18	38.55	39.50
	SD		*13.06*	*14.85*
Gain	**Mean**	18	12.33	14.50
	SD		*6.48*	*7.15*

Table 6.1 shows that the mean scores of the two groups were very similar in the pre-test session. However, before the practice session, it was necessary to make sure that the learners in the two groups were homogenous in terms of the knowledge of the

target linguistic forms and that there was no statistically significant difference between the two groups. Therefore, an independent samples t-test analysis was conducted on the overall test scores obtained from the pre-test session. The result of the t-test analysis indicated that there was no significant difference ($p<.05$) between the two output groups in their knowledge of relativisation at the start of the practice sessions ($t = .247$, $df = 34$, $p = .807$).

The overall test results from the post-test, presented in Table 6.1, revealed that the two groups made substantial progress from the pre-test to the post-test. This is clearly illustrated in the following figure.

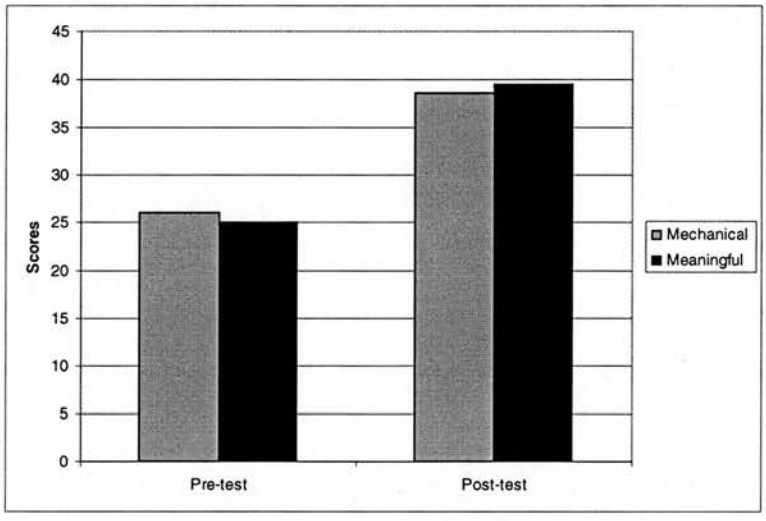


Figure 6.1 Mean overall test scores by the two output groups

To determine the effectiveness of the output activities on the learning of the target linguistic forms, the scores of the two groups were submitted to paired samples t-test analysis. Tables 6.2 shows significant improvement for both groups from the pre-test to the post-test ($p <.001$). This shows that the materials used for both groups were effective in promoting progress.

Table 6.2 Summary of the results of within group comparison for each output group (using paired samples t-test)

Overall pre-test & post-test	df	t-value	Sig.
Mechanical group	17	8.180	.000*
Meaningful group	17	8.597	.000*

* The mean difference is significant at the .001 level.

Finally, to determine whether the Meaningful output group had made more progress than the Mechanical output group, a further independent samples t-test was performed comparing the post-test scores. Contrary to expectations, the result of the t-test revealed no significant difference between the Mechanical and Meaningful groups at the .05 level of significance (t =.203, df= 34, p=.420). This means that although the groups worked on two different types of activities, they did not differ in the learning of the RC structure.

An explanation for this finding can be provided by considering the method of practice. Although the output activities were considerably different for the two output groups, their method of practice, *i.e.* collaborative pair work, was similar. When learners are working in collaboration, two monitoring mechanisms are involved, which are responsible for accurate production of language. It is possible that when one learner produces a meaningless or mechanistic structure, it is immediately followed by the peer's request for clarification or further explanation (see Chapter 8 for extracts of pair interaction). Further explanation of the problems (LREs) during the completion of the Mechanical activities might have made the target form salient for the learners and focused their attention on it. Perhaps learning in collaboration, regardless of the activity type, makes some tools available to the learners, which are constructive to the learning process.

6.2 Results of the different testing measures

The analysis of the overall test scores revealed that both Mechanical and Meaningful output activities were effective in improving the knowledge of English RCs. However, it is not clear whether this improvement is true for all testing measures or

not. To this end, the results of each test will now be analysed separately: translation from L1 to L2 (Test A), sentence combination test (Test B) and test of translation from L2 to L1 (Test C). Table 6.3 presents the mean scores and standard deviations of the two groups on the three types of the test.

Table 6.3 Descriptive statistics for the three tests: Means and standard deviations

	Mechanical		**Meaningful**	
Tests	**Pre-test**	**Post-test**	**Pre-test**	**Post-test**
Test A Mean *SD*	**4.61** *3.85*	**8.50** *4.81*	**5.00** *4.31*	**9.44** *5.34*
Test B Mean *SD*	**4.11** *4.21*	**10.50** *5.09*	**4.38** *5.21*	**10.50** *7.22*
Test C Mean *SD*	**17.33** *3.91*	**19.55** *4.27*	**15.61** *6.66*	**19.55** *4.55*

It can be seen from the data in Table 6.3 that learners in both groups made substantial progress from the pre-test to the post-test. However, they did not perform similarly in all three tests. While Test C (the English to Farsi translation test) showed a comparatively high mean score on the pre-test, the mean scores on Tests A and B were relatively low at the pre-test session. The learners performed similarly in translation from Farsi into English and sentence combination. The trend is relatively similar for both Mechanical and Meaningful groups. To find out whether there is any significant difference among the three tests, the learners' pre-test and post-test scores on each test were submitted to one way ANOVA. The results of these analyses are summarised in Table 6.4.

Table 6.4 Summary of ANOVAs on the pre-test and post-test scores (test effect)

	SS	df	MS	F	Sig.
Pre-tests: A& B & C	3429.630	2	1714.815	75.80	.000*
Post-tests: A & B & C	2356.130	2	1178.06	42.93	.000*

* The mean difference is significant at the .001 level.

The analyses indicated a significant difference among the three tests in both testing sessions. The *post-hoc* LSD comparisons revealed no contrast between Tests A and

B (p=.621>.05); however, significant contrasts were found between Tests C and A (p=.000<.001) and Tests C and B (p=.000<.001). As mentioned before, Tests A and B were employed to examine the productive ability of the learners in English RCs and Test C was used to assess the receptive ability of the learners. Thus, the result of this analysis suggests that there might be a difference between the productive and receptive ability of the Farsi learners at this level of proficiency. The performance of the two groups on each test is displayed in the following figures.

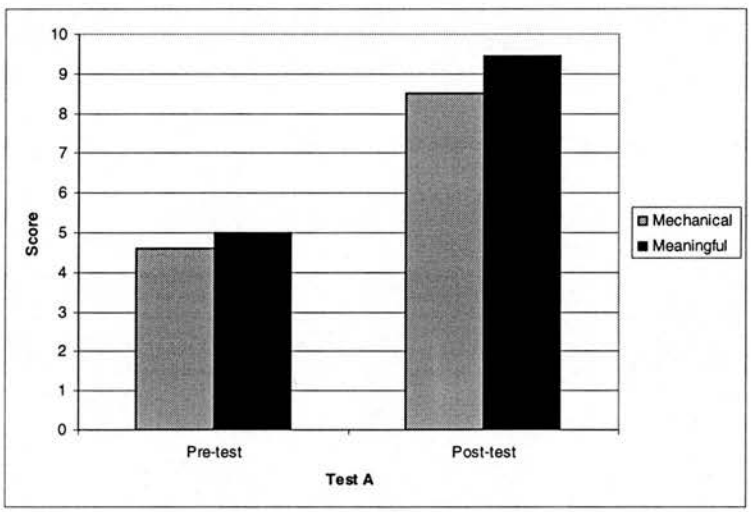


Figure 6.2 Mean scores for the test of translation from L1 to L2 (Test A)

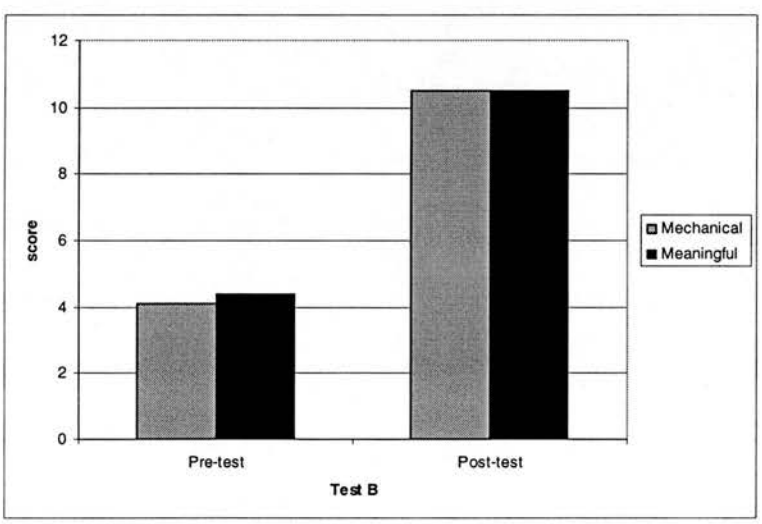


Figure 6.3 Mean scores for the sentence combination test (Test B)

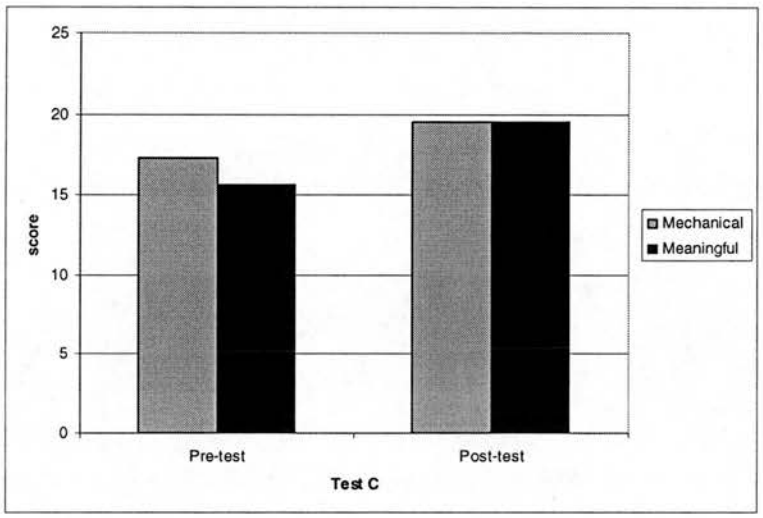


Figure 6.4 Mean scores for the test of translation from L2 to L1 (Test C)

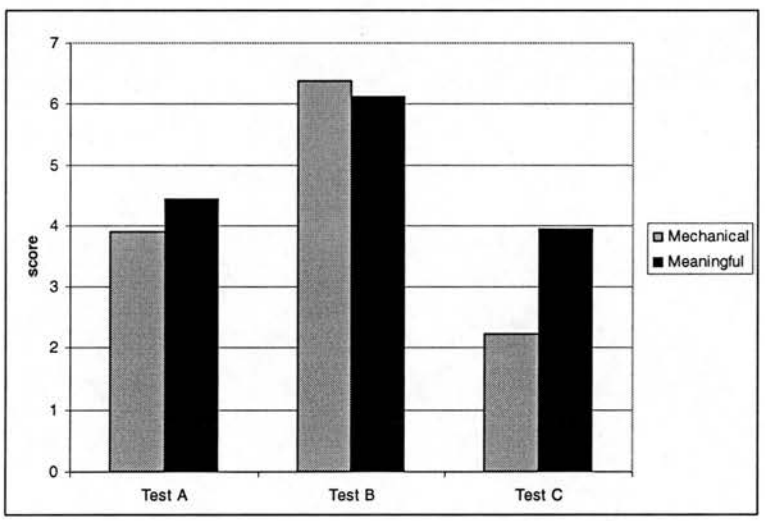


Figure 6.5 Mean gain scores on the three testing measures (A, B and C) by the two groups

As shown in Figure 6.5, the benefits of the practice sessions were highest in the sentence combination test (Test B) for both groups. The lowest improvement occurred in the test of translation from L2 to L1 (Test C) in the Mechanical group. The test of translation from L1 to L2 showed a medium improvement for both groups. To test the significance of these improvements, the pre- and post-test scores

of each group were compared through paired t-tests. The summary of these analyses is displayed in Table 6.5.

Table 6.5 Summary of the results of within-group comparisons for each test (paired t-test)

	Mechanical (*df*=17)		**Meaningful (*df*=17)**	
Tests	t value	Sig. (2-tailed)	t value	Sig. (2-tailed)
Translation from L1 to L2	8.144	.000*	6.860	.000*
Sentence combination test	8.515	.000*	4.329	.000*
Translation from L2 to L1	2.938	.009*	4.223	.001*

* The mean difference is significant at the .05 level.

As Table 6.5 shows, both Mechanical and Meaningful groups made significant progress on Test A and Test B. For Test C, although the improvement was lower than the other two tests, it was significant for both groups ($p<.05$). The lower improvement in Test C can be explained by comparing the learners' level of scores in the pre-test session. As Table 6.3 shows, the learners were relatively good at comprehending English RCs and producing them in Farsi at the start of the sessions. Therefore, there was little room left for further learning and progress in this test (Test C). On the other hand, the learners' scores were very low on the two production tests (Tests A and B) at the beginning of the practice, suggesting that they were already weak and had the capacity to make much more progress than in the former test.

To find out whether the Mechanical and Meaningful output groups were different in their progress on the three tests, three independent samples t-tests were carried out on the mean gain scores, obtained by subtracting the means of pre-test scores from the means of post-test scores (see also Figure 6.5).

Table 6.6 Results of between-group comparisons for gain scores (using independent t-test)

Tests	df	t-value	Sig. (2-tailed)
Gain Test A: Mechanical Meaningful	34	.690	.495
Gain Test B: Mechanical Meaningful	34	.174	.863
Gain Test C: Mechanical Meaningful	34	1.433	.161

The comparison of the two groups' gain scores through independent t-tests also revealed no significant difference in the gain scores of the three tests between the two output groups (see Table 6.6), suggesting that the two output groups did not differ in their progress in the three tests.

6.3 Results of relative clause type

As explained in Chapter 5, each test consisted of 24 items targeting subject (SU), direct object (DO), object of preposition (OP) and genitive (GE) relatives. The items were designed to include six samples from each RC type. Thus, the total number of items representing each RC type was 18 in the three tests. Now, it would be interesting to find out how learners performed on each type and whether they have followed any order of acquisition in the learning of RCs. To this end, the learners' scores on the four RC types were calculated and entered into a table. Table 6.7 presents the mean scores obtained for SU, DO, OP and GE by the two groups in all three tests.

Table 6.7 Descriptive statistics for each RC type in the two output groups

	Pre-test				**Post-test**			
	SU	DO	OP	GE	SU	DO	OP	GE
Mechanical	**8.88**	**6.27**	**7.27**	**3.5**	**11.72**	**10.27**	**11.77**	**4.77**
Meaningful	**8.5**	**6.11**	**6.61**	**3.61**	**12**	**10.83**	**11.16**	**5.44**
Total	**8.69**	**6.19**	**6.94**	**3.55**	**11.86**	**10.55**	**11.46**	**5.10**

The table reveals that both Mechanical and Meaningful groups improved on all types of RC after completing the activities. On both pre-tests and post-tests, the highest score was obtained for SU clauses, followed by OP and DO with a slight difference in their mean scores. Not surprisingly, the lowest mean score was observed for GE clauses. Although no instruction was provided on this type, the learners made a slight improvement on it. Figures 6.6, 6.7, 6.8 and 6.9 display a clear rising trend in the learners' performance for each RC type.

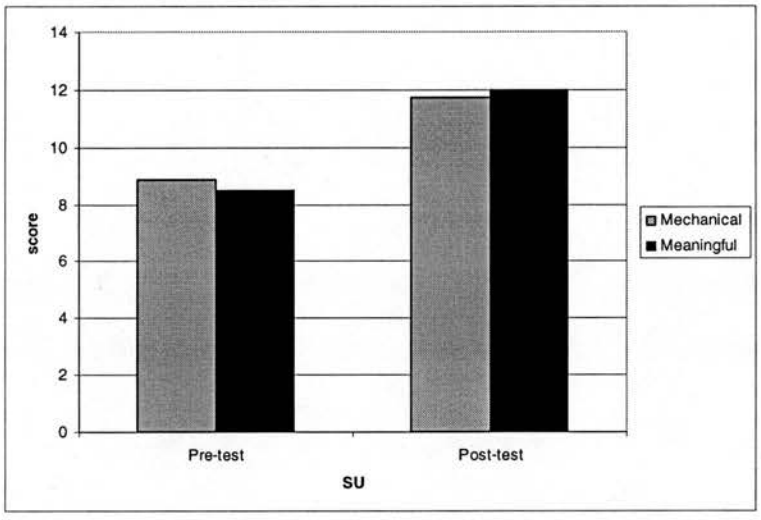


Figure 6.6 Mean scores for subject RCs

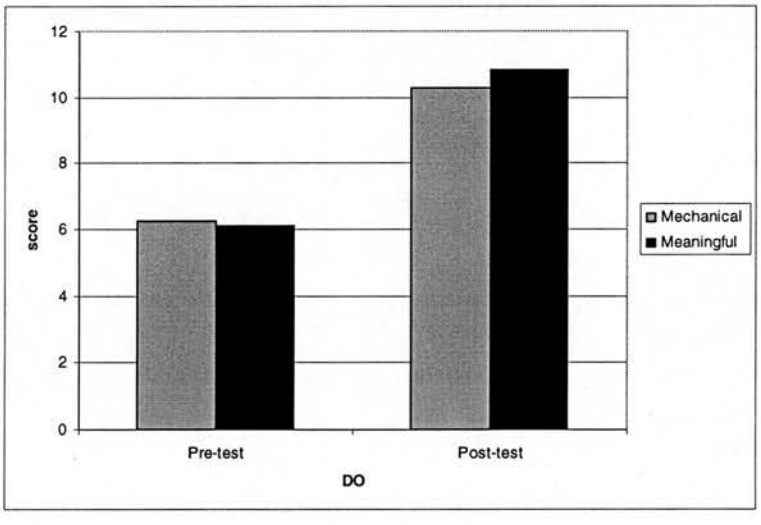


Figure 6.7 Mean scores for direct object RCs

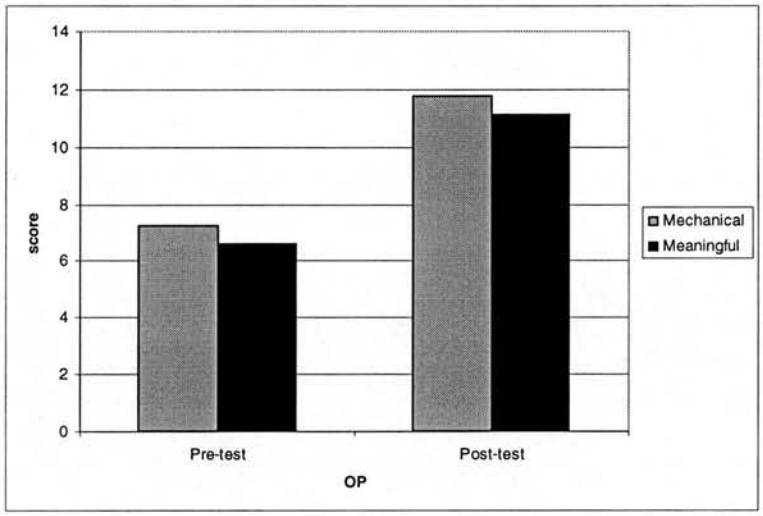


Figure 6.8 Mean scores for object of preposition RCs

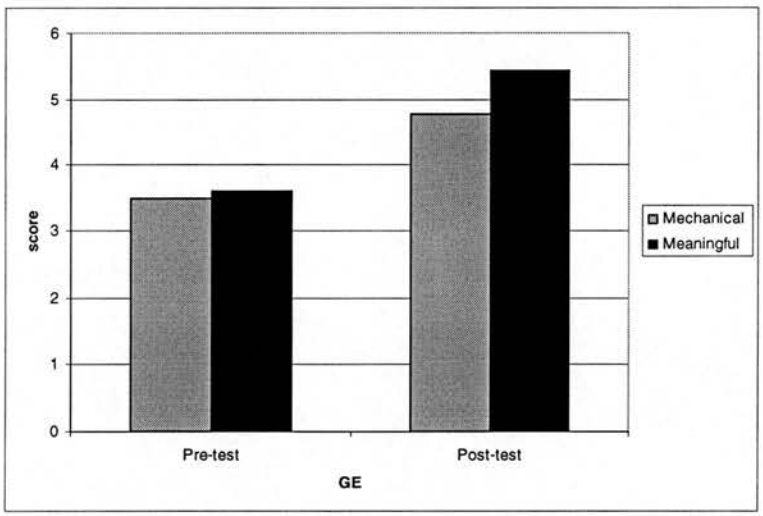


Figure 6.9 Mean scores for genitive RCs

In order to have a clear view of the progress made on each RC type, the gains made from the pre-test to post-test were calculated. The descriptive statistics for the gain scores are presented in Table 6.8 below.

Table 6.8 Descriptive statistics for gain scores of each RC type

	Groups	Mean	Std. Deviation	N
Gain SU	Mechanical	2.84	2.70	18
	Meaningful	3.50	2.22	18
	Total	3.17	2.49	36
Gain DO	Mechanical	4.00	3.42	18
	Meaningful	4.72	3.04	18
	Total	4.36	3.21	36
Gain OP	Mechanical	4.50	2.68	18
	Meaningful	4.55	2.66	18
	Total	4.52	2.63	36
Gain GE	Mechanical	1.27	1.87	18
	Meaningful	1.83	2.54	18
	Total	1.55	2.22	36

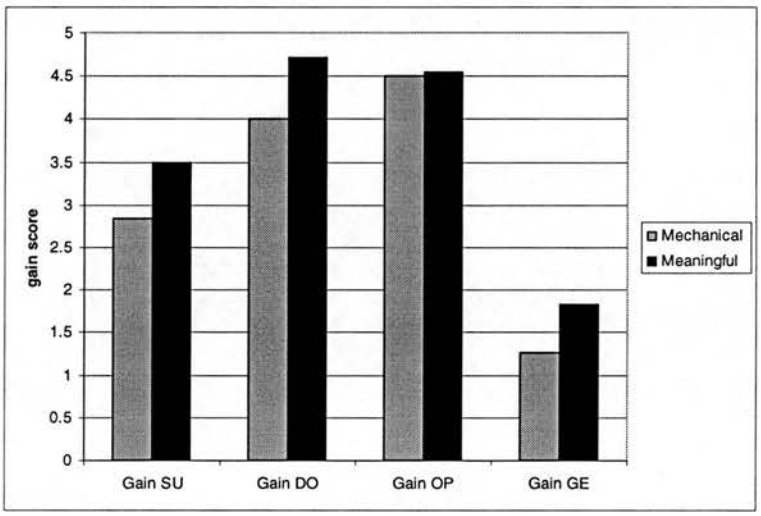


Figure 6.10 Mean gain scores on the four RC types by the two groups

As is clear from the graphical display in Figure 6.10, the output activities had not only improved the learners' abilities on the three targeted RCs (SU, DO, OP), but also appear to have slightly influenced the ability of the learners in GE relatives. The slight progress in GE might be due to the learners' exposure to this form during testing sessions, particularly through the test of translation from English to

Farsi (Test C). The test may have served as *input flooding* and provided opportunities for learning through focusing their attention to the form. Another possible reason for the partial improvement on GE relatives may be the use of very unique and marked relative pronoun, *i.e. whose*, denoting this structure. As Gass (1979: 341) has explained, 'the fact that whose is uniquely coded and that there are no variants, may serve to make it the most salient of the English RC markers, thereby rendering it easily perceivable by the L2 learner'.

Now it might be relevant to find out whether the learners in the two groups differed in their mean gain scores on the four types of RC and whether there was any significant difference among the gain scores of each RC type. To test for the effect of RC type, the gain scores were submitted to ANOVA with one between-subject factor (type of output) and one within-subject factor (SU vs. DO vs. OP vs. GE). The result of the ANOVA is summarised in Table 6. 9.

Table 6.9 Summary of ANOVA for the effect of RC gain scores

Effect	df	F	Sig.
Gain	3	13.409(a)	.000*
Gain * Groups	3	.238(a)	.869

* The mean difference is significant at the .001 level.

The analysis revealed no significant effect for group (F=.238, p=.869), but a significant effect for the gain scores from each RC type (p<.001). This means that the two groups did not differ in their RC gain scores, but there was a difference among the gain scores of the four RC types. The *post hoc* LSD comparisons revealed the following contrasts between the four RCs:

Table 6.10 *Post hoc* comparison on the mean gain of RC type

	DO	OP	GE
SU	.762	.307	.013*
DO		1.000	.000*
OP			.000*

* The mean difference is significant at the .05 level.

Table 6.10 shows that the difference between the gain for the GE relatives and for SU, DO and OP relatives is significant. This result is not surprising as the learners worked on SU, DO and OP clauses during their treatment sessions but received no practice in GE clauses.

In terms of the order of difficulty in the production and comprehension of RCs, the present study adopted the predictions of the *Noun Phrase Accessibility Hierarchy* (NPAH), discussed in Chapter 4. For the sake of convenience, the prediction of the NPAH is presented below:

Subject (SU)> Direct Object (DO)> Object of Preposition (OP)> Genitive (GE)

The research question 1 (b) addressed the predictions of this hierarchy. The overall pre-test scores obtained for each RC type revealed that the learners obtained the highest mean score in *SU* clause and the lowest mean score in GE clause (see Table 6.10). This is in line with the predictions of the NPAH. However, object of preposition and direct object were reversed in the order, with the former obtaining a higher (but not significantly different) mean score than the latter (SU>OP>DO>GE). To examine whether the learners had followed the predictions of the NPAH in comprehension and production, their performance (i.e. mean scores) on each test was separately examined. Table 6.11 shows the order of difficulty of RCs in the three tests.

Table 6.11 Order of difficulty in the production and comprehension of RCs in the three tests

	Pre-test	Post-test
Test A (Translation from Farsi to English)	SU>DO>OP>GE	SU>DO>OP>GE
Test B (Sentence combination production)	SU>DO>OP>GE	SU>**OP>DO**>GE
Test C (Translation from English to Farsi)	**OP>**SU>DO>GE	**OP>**SU>DO>GE

(>) means easier than

What is apparent from this result is that the order of difficulty in the two production tests in English (A and B) was different from that in the comprehension test (C).

While the difficulty order in Tests A and B supports the predictions of the NPAH (with the exception of the position of OP, which is reversed with DO in Test B in the post-test session), the difficulty order obtained for Test C suggests that OP is the easiest RC type both in the pre-test and in the post-test.

However, there is a major problem in testing the predictions of the order of difficulty based on the calculation of the mean scores across the groups of learners. As Eckman (2007) has argued, the claims of the NPAH can not be tested against grouped data. Rather, it must be tested against individual interlanguages. It is possible that the learners' performance as a group may support the NPAH, but as individuals, may not. Eckman (2007: 323) further argues that 'there is no IL grammar of a group of learners, just as there is no mind of a group of people'. Considering this argument, the data obtained for the present study were further analysed for individual interlanguage grammars.

Following the steps in Hatch and Farhady (1982), each learner's pre-test and post-test score on each RC type was arranged in the form of an implicational scale according to the NPAH. The criterion of acquisition or correctness was set at 60% and the learner's score on each RC type was marked as either '1' (above 60%) or '0' (below 60%). These two implicational scales are displayed in Tables 6.12 and 6.13 (see also Appendix 16).

As is clear from the two tables, the learners improved on their abilities on RC after completing the collaborative output activities. This is clearly demonstrated in the number of learners who did not show the acquisition of any RC type before the practice sessions (n=22) and by the significant decrease in the number of these learners on the post-test session (n=7). For example, learner number 21, 32, 12 and 23 showed no learning evidence in the pre-test session but acquired all three RC types or two of them targeted in the treatment material. Furthermore, the performance of some of the learners (e.g., learner 1, 9 and 18) showed that they had not only filled their gaps on OP and DO, but had also made further progress on GE.

The tables clearly show that SU relatives are the easiest structure that has been acquired since a large number of learners acquired it earlier than other RC types both in the pre-test (n=13) and in the post-test (n=20).

Table 6.12 Pre-test score data for scaling four RC types according to the NPAH

Criterion = 60% Scalability[6] =.912

Participants (n=36)	SU	DO	OP	GE	Total
1	**1**	**1**	0	**1**	
9	**1**	**1**	0	0	
18	**1**	0	**1**	0	
31	**1**	0	**1**	0	
34	**1**	0	**1**	0	
8	**1**	0	0	0	
11	**1**	0	0	0	
15	**1**	0	0	0	
16	**1**	0	0	0	
19	**1**	0	0	0	
20	**1**	0	0	0	
30	**1**	0	0	0	
33	**1**	0	0	0	
17	0	**1**	0	0	
2	0	0	0	0	
3	0	0	0	0	
4	0	0	0	0	
5	0	0	0	0	
6	0	0	0	0	
7	0	0	0	0	
10	0	0	0	0	
12	0	0	0	0	
13	0	0	0	0	
14	0	0	0	0	
21	0	0	0	0	
22	0	0	0	0	
23	0	0	0	0	
24	0	0	0	0	
25	0	0	0	0	
26	0	0	0	0	
27	0	0	0	0	
28	0	0	0	0	
29	0	0	0	0	
32	0	0	0	0	
35	0	0	0	0	
36	0	0	0	0	
Correct	13	2	0	0	**15**
Incorrect	0	1	3	1	**5**

[6] C_{rep}=.9305; MM_{rep}=.20883; % improvement =.72167; Coefficient of scalability=.912

Furthermore, GE relatives seem to be the most difficult RC since only one learner was able to acquire it on the pre-test session. I do not compare GE relative to other RCs in the post-test, since the learners did not practise GE during the three sessions. These findings are in line with the predictions of the NPAH, although very few violations are observed in the individual learners' performance.

Table 6.13 Post-test score data for scaling four RC types according to the NPAH

Criterion= 60% Scalability[7]=.948

Participants (n=36)	SU	DO	OP	GE	Total
1	1	1	1	1	
9	1	1	1	1	
18	1	1	1	1	
11	1	1	1	0	
15	1	1	1	0	
19	1	1	1	0	
20	1	1	1	0	
21	1	1	1	0	
30	1	1	1	0	
31	1	1	1	0	
32	1	1	1	0	
33	1	1	1	0	
12	1	1	0	0	
16	1	1	0	0	
23	1	1	0	0	
34	1	0	1	0	
7	1	0	0	0	
8	1	0	0	0	
17	1	0	0	0	
27	1	0	0	0	
36	0	1	0	0	
2	0	0	1	0	
4	0	0	1	0	
26	0	0	1	0	
3	0	0	0	0	
5	0	0	0	0	
6	0	0	0	0	
10	0	0	0	0	
13	0	0	0	0	
14	0	0	0	0	
24	0	0	0	0	
Correct	17	15	12	3	47
Incorrect	0	1	4	0	5

[7] C_{rep}=.9652; MM_{rep}=.3263; % improvement =.6388; Coefficient of scalability=.948

Four learners on the post-test (36, 2, 4 and 26) did not follow the order of the NPAH and acquired DO or OP earlier than SU relative. One learner also did not manage to fill the gap on DO relative (34) after practising this structure during three sessions. Overall, at the 60% criterion level, the coefficient of scalability is quite high for both sets of scores ($C_{\text{pre-test:}} = .912$ and $C_{\text{post-test}} = .948$), suggesting that the data are definitely ordered in agreement with the NPAH hypothesis. Therefore, this finding gives support to hypothesis 1 (b), which predicted that the results of the overall test scores will support the predictions of the NPAH.

6.4 Summary and discussion

This chapter presented the results of the tests administered prior to and after receiving the activities. The comparison of the overall test scores obtained from the pre-testing session showed that the two groups did not differ in their knowledge of relativisation. The same test conducted in the end of the treatment demonstrated that the learners in both groups made significant progress after completing the activities ($p<.001$). This suggests that both activity types were effective in facilitating the learning of the RCs. However, contrary to the prediction of our hypothesis, the Meaningful group did not outperform the Mechanical group. Therefore, the first hypothesis (1a), which stated that the *more Meaningful* output activities would have a greater effect on learning English RCs than the *more Mechanical* output activities, was not supported. This means that the Mechanical activities were no less effective than the Meaningful activities in terms of the product of learning, as measured through the tests. Whether the activities were similar in generating focus on form in the process of learning will be explored in the next chapter.

The analysis of the test scores revealed that learners in both groups made significant progress in all three tests, with the highest gains achieved for sentence combination (Test B) followed by translation from Farsi to English (Test A). The least improvement was observed in the test of translation from English to Farsi (Test C), which was significantly different from that for the other two tests. A further look at the mean scores of the learners in Test C revealed that the learners had already

scored high on this test at the start of the practice. A possible explanation for the significant difference found between Tests A/B and Test C can be provided by considering the linguistic demand (productive or receptive) of the tests. Unlike Tests A and B, which required production in English, Test C required comprehension in English and production in Farsi.

The analysis of the scores obtained for each RC type showed that the learners in both groups improved significantly on the SU, DO and OP relatives, which were practised during their treatment sessions. The learners also made a slight, but not significant, improvement on GE relatives. The analysis of each RC type further revealed that the learners predominantly followed the predictions of the NPAH in the acquisition of RCs. The implicational scales also revealed that the pre-test and post-test data were in line with the predictions of the NPAH hierarchy.

CHAPTER 7

Findings from the process data

This chapter presents the results of the data obtained from the tape-recorded pair interactions. As mentioned earlier, 32 hours of tape-recordings were obtained from the learners' interaction during the completion of the activities. After transcribing the spoken data, the transcripts were coded based on the categories introduced in the LRE framework. The purpose was to probe into the discussions between the learners and explore their focus of attention and nature of exchanges. After analysing the data, the LREs were quantified and tabulated (presented in Tables 7.23 and 7.24). These tables were collapsed into smaller ones to be considered in detail.

Now, the question is whether the two Mechanical and Meaningful output groups differed in their LRE features. To answer this question, the results obtained from the LRE analysis will be presented and the two groups will be compared in terms of the number of LREs they produced, their focus of attention (type of LRE), the value, nature and outcome of episodes. Further analyses in this chapter involve the relationship between the *time* spent on the activities and the number of LREs produced as well as the number of LREs and the level of progress.

7.1 Number of language-related episodes

The LREs identified in the spoken data were analysed from a variety of angles. An important point should be made here with respect to the analysis and comparison of LREs between the two output groups. Although a framework was established to categorise LREs as various types (e.g. grammatical, meaning-based, weighty, light, continuous, overlapping), these variables are not considered as categorical or nominal (all-or-nothing type). In other words, the question is not whether an LRE is meaning-based or is not, but whether there are more meaning-based LREs in one group than in the other. Therefore, the nature of the variable is continuous (more-or-less) and its value or score changes from pair to pair and group to group. This way of

looking at data will allow us to find out which group has *more*, for example, grammatical LREs than the other. Therefore, after consulting a number of statisticians and following previous papers on LRE analysis (e.g. Swain and Lapkin, 2001; Leeser, 2004, Storch, 2007), comparison of the means (through t-test) was considered to be more appropriate than other tests (e.g. Chi-square). Furthermore, t-test analysis can give us more information about the data, for example, the means and standard deviations of the groups.

The research question 2 (a) in the present study addressed the number of LREs:

2. (a) Do learners working collaboratively on the more Meaningful output activities produce more language-related episodes than learners working collaboratively on the more Mechanical output activities?

It should be remembered that the learners in each group participated in three fortnightly sessions accomplishing three different activities. Table 7.1 shows the total number of LREs, their percentage within each output group, means and standard deviations.

Table 7.1 LREs produced in the six activities by the two groups

Mechanical group (9 pairs)	**Total No. of LREs**	**% LRE**	**Mean**	**SD**
Substitution	197	34.5 %	21.88	10.39
Transformation	166	29.0 %	18.44	6.57
Text-development	209	36.5 %	23.22	10.56
Total	**572** (42%)	100 %	**63.5**	27.52
Meaningful group (9 pairs)	**Total No. of LREs**	**% LRE**	**Mean**	**SD**
Picture Description	322	41.5 %	35.77	12.33
'Let's complain'	305	39.3 %	33.88	11.35
Dictogloss	149	19.2 %	16.55	6.48
Total	776 (58%)	100 %	**86.2**	30.16

A total of 1348 LREs were identified in the transcripts of the learners' interaction in six sessions. The findings (presented in Table 7.1) show that the total number of LREs produced by the Meaningful group was higher than that produced by the Mechanical group. Furthermore, the mean number of LREs for the former group (86.2) is more than that for the latter group (63.5). To determine whether the Meaningful group had produced more LREs, a t-test analysis was carried out. The result of this test indicated a significant difference between the two groups ($p<.05$)., giving support to our second general hypothesis 2 (a) which predicted that the Meaningful output group will produce more language-related episodes than the Mechanical output group ($t=1.95$, $df=16$, $p=.03$).

We can further examine the distribution of LREs produced within each output group. As the pie chart in Figure 7.1 shows, in the Meaningful group, the *picture description* and '*let's complain*' seemed to be more successful than the *dictogloss* in focusing the learners' attention on linguistic features. The two activities had approximately produced similar number of episodes, slightly more than twice the number produced in the *dictogloss*.

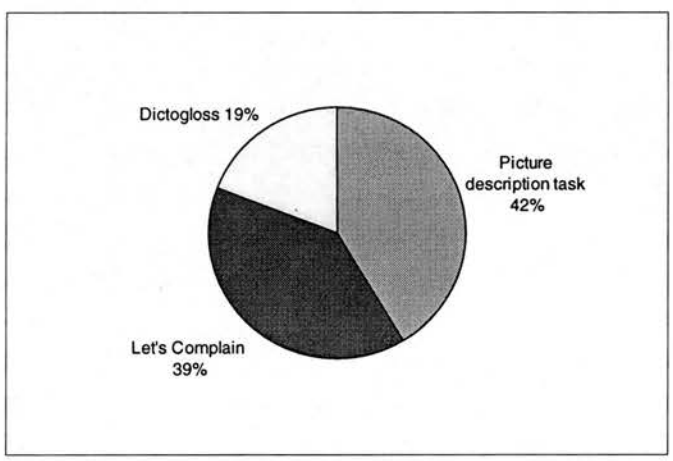


Figure 7.1 Distribution of LREs in the Meaningful activities

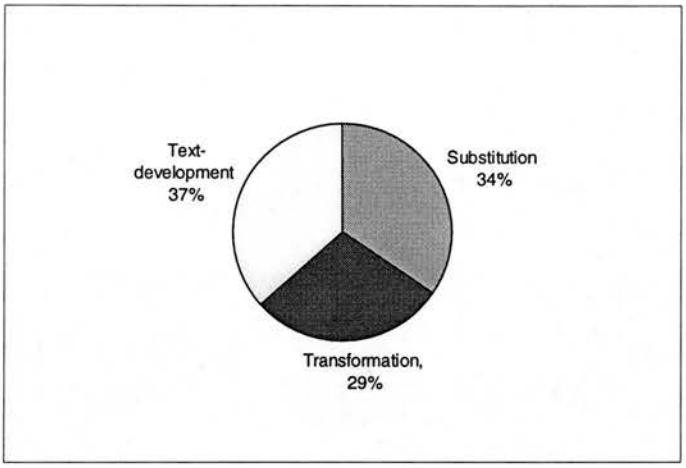


Figure 7.2 Distribution of LREs in the Mechanical activities

While the distribution of episodes in the Meaningful activities differed, all the Mechanical activities produced similar numbers of LREs (Figure 7.2). The low number of LREs associated with the dictogloss may be attributed to the nature of this activity. It seems that the learners' discussion of linguistic features in this activity is affected by the degree of their access to input. Unlike the other activities, which were abundant in input and were delivered in written form, the dictogloss was delivered orally in one minute, whereby the learners had no control over the speed at which the information was presented (Lynch, 1996). Thus, the low number of LREs in this activity can be accounted for by the learners' limited access to input, which may have inhibited them in extending their discussions of the linguistic features.

7.2 Types of language-related episode

The research question 2 (b) addressed the linguistic focus of LREs in the two output groups: "Do learners working collaboratively on the more Meaningful output activities produce more meaning-based episodes than the learners working collaboratively on the more Mechanical output activities?". In order to answer this question, a comparison should be made between the groups in terms of the amount of attention they generated to linguistic features. Based on the framework, the major categories included in the types of LRE were *grammatical*, *meaning-based*, *orthographic*, *identification* and *discourse*. Tables 7.2 and 7.3 and Figures 7.3 and

7.4 show the types of LREs produced in each activity by both the Mechanical and Meaningful groups.

Table 7.2 Types of LREs in each activity of the Mechanical group

Mechanical	**Substitution**	**Transformation**	**Text-development**	**Total LREs**			
(9 pairs)	No. of LREs	No. of LREs	No. of LREs	No. of LREs	% LRE	Mean	SD
Grammatical	152	141	149	442	77.3 %	49.11	16.88
Meaning-based	24	9	48	81	14.2 %	9.00	6.28
Orthographic	21	16	12	49	8.5 %	5.44	4.12
Total	197	166	209	572	100%	63.5	27.2

Table 7.3 Types of LREs in each activity of the Meaningful group

Meaningful	**Picture-description**	**'Let's complain'**	**Dictogloss**	**Total**			
(9 pairs)	No. of LREs	No. of LREs	No. of LREs	No. of LREs	%LRE	Mean	SD
Grammatical	155	148	22	325	41.9%	36.11	11.8
Meaning-based	150	141	67	358	46.1%	39.77	14.2
Orthographic	17	16	4	37	4.8%	4.11	2.52
Identification	0	0	48	48	6.2%	5.33	2.8
Discourse	0	0	8	8	1.0%	.88	1.69
Total	322	305	149	776	100%	86.2	33.0

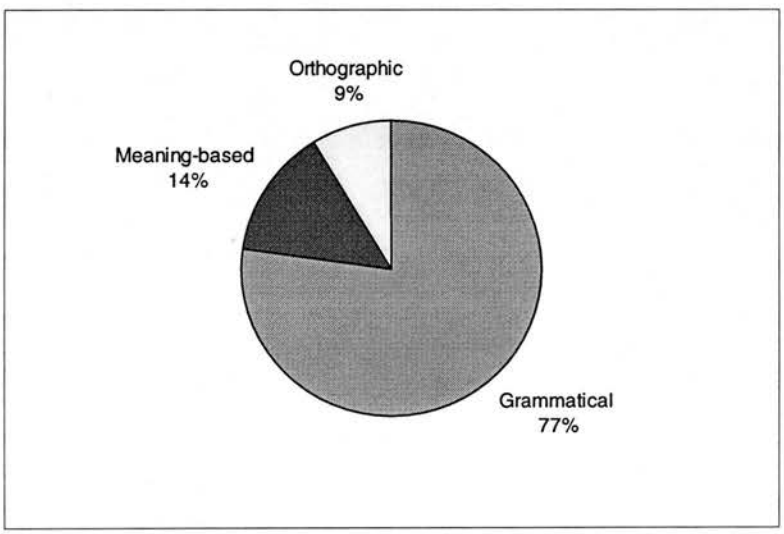


Figure 7.3 Types of LRE in the Mechanical activities

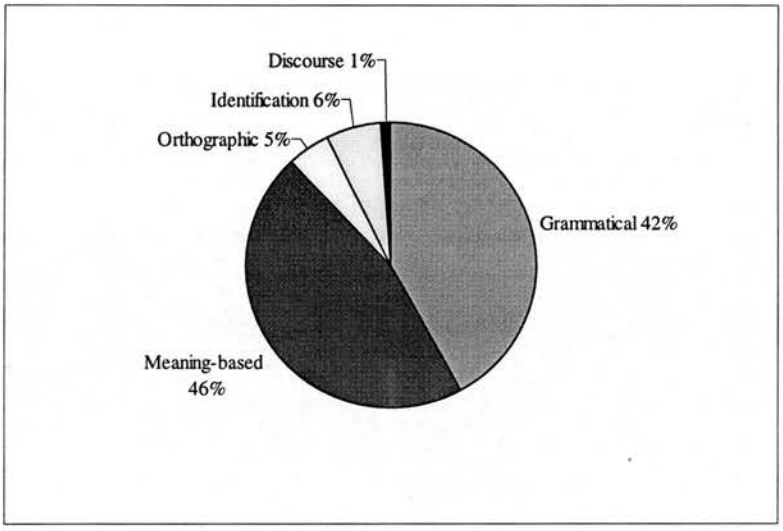


Figure 7.4 Types of LRE in the Meaningful activities

As can be seen, grammatical episodes were produced more frequently than other episodes by the Mechanical group. While the meaning-based episodes constituted a small portion in this group's episodes (14%), their proportion (42%) was very similar to that of the grammatical episodes (46%) in the three activities of the Meaningful group. In other words, learners in the Meaningful group tended to pay attention to both meaning-based and grammatical features of their language.

Orthographic features attracted the learners' attention in both groups, whereas identification episodes were produced only by the Meaningful group in the dictogloss. This is not surprising, since the latter category was introduced solely to encode the discussion about the identification of words on the tape. Finally, discourse episodes constituted a marginally smaller proportion compared to other episodes in the Meaningful group. This suggests that the learners had dealt with discourse requirements, such as linking their sentences together in the dictogloss.

Overall, a relatively good spread of attention on various linguistic features can be observed in the Meaningful group, whereas in the Mechanical group, it was the grammatical features that captured the learners' attention much more frequently than any other episode. Tables 7.2 and 7.3 further demonstrate that the Meaningful activities (with the exception of the dictogloss) were stronger than the Mechanical

activities in generating LREs. By comparing the number of grammatical LREs in the five activities, it is revealed that the picture description and 'let's complain' not only produced almost similar numbers of grammatical LREs as the Mechanical activities (n=155, n=145), but also almost equally generated meaning-based LREs (n=150, n=141). The trend, however, was different for the dictogloss. Not only was the number of LREs less than that in other activities, but also the meaning-based episodes were produced much more frequently than the grammatical episodes (three times more).

To find out whether the two output groups differed in the mean number of grammatical, meaning-based and orthographic LREs, three independent samples t-test analyses were carried out. Since no instances of identification and discourse LREs were identified in the Mechanical group's interaction, they were excluded from this analysis. The results are presented in the following table.

Table 7.4 Summary of the results of between-group comparisons

LREs	df	Mean Mechanical	Mean Meaningful	t-value	Sig. (1-tailed)
Grammatical	16	49.11	36.11	1.893	.038*
Meaning-based	16	9	39.77	5.945	.000*
Orthographic	16	5.44	4.11	.827	.210

*. The mean difference is significant at the .05 level.

Table 7.4 shows that the groups differed in the grammatical and meaning-based LREs ($p<.05$). This means that the grammatical LREs were produced more frequently in the Mechanical activities and the meaning-based LREs were produced more frequently in the Meaningful activities. The difference in the mean number of orthographic episodes was not significant. The result confirms the speculation that the Meaningful output activities invoke more discussions on the meaning, giving support to our hypothesis (2b) ($p<.05$).

7.3 Value, nature and outcome of language-related episodes

Some L2 researchers have argued that the quantification of LREs does not necessarily reveal their actual value. Fortune and Thorp (2001), for example, proposed that those LREs which constitute extended discussions and use of metalinguistic knowledge may result in deepening the understanding of the linguistic feature under discussion. Thus, in the present study, in addition to the amount and focus of attention, such characteristics of episodes as *value*, *nature* and *outcome* were also examined.

The value (or weight) of episodes refers to the degree of learners' involvement in making linguistic decisions. As mentioned earlier in Chapter 5, this category was subdivided into weighty and light episodes. The weighty episodes are those episodes in which the learners apparently explain or justify their linguistic choices by drawing on their linguistic system or other knowledge resources. The light episodes on the other hand, are those episodes which do not involve a deeper level of engagement and in which learners seem to make their linguistic decisions based on intuition (Fortune and Thorp, 2001).

In the present study, it was hypothesised that weighty episodes will be produced more frequently in the Meaningful activities than in the Mechanical activities (hypothesis 2c). Table 7.5 shows the number, percentage, means and standard deviations of the light and weighty episodes produced by the two groups of learners. While a considerable difference can be observed in the number of light episodes, weighty episodes were produced almost equally by both groups. In addition to the differences in the number of light episodes, the mean number of light episodes also differs across the two groups.

Table 7.5 Value of LREs in the two output groups

Light	**Mechanical group**	**Meaningful group**
No. of LRES	390	591
% LRE	68.2%	76.2%
Mean	43.33	65.66
SD	11.72	12.47
Weighty	**Mechanical group**	**Meaningful group**
No. of LRES	182	185
% LRE	31.8%	23.8%
Mean	20.22	20.55
SD	14.55	15.24

A further examination of the table shows that although the number of weighty episodes is approximately equal across the two groups, they constitute different proportions within the groups. That is, the weighty episodes constitute a larger percentage of the total LREs in the Mechanical output activities (31%) than that in the Meaningful output activities (23%). To confirm whether the differences between the means of the two output groups in the light and weighty episodes are significant, two independent samples t-tests were carried out. The result is presented in Table 7.6.

Table 7.6 Summary of the results of between-group comparisons on the LRE value

LREs	df	Mean Mechanical	Mean Meaningful	t-value	Sig. (1-tailed)
Light	16	43.33	65.66	3.914	.000*
Weighty	16	20.22	20.55	.047	.481

*. The mean difference is significant at the .001 level.

The result shows a significant difference between the two groups on the light episodes ($p<.001$). The two output groups, however, do not have differing means for the weighty episodes. This finding rejects our hypothesis 2c, which predicted that the Meaningful group would produce more weighty episodes than the Mechanical group ($p<.05$). It is difficult to explain this finding, but there seems to be a relationship between the learners' focus of attention and discussion of grammatical features of the language and the number of weighty and light episodes. As discussed in previous section, the majority of LREs in the Mechanical activities focused on grammar

(77%). Furthermore, the difference between the means of the two output groups did not differ in this category. It may be the case that focusing attention on grammar stimulated more discussion and metalinguistic explanations (involving weighty episodes) than focusing on meaning or lexis. Of course, this does not mean that the meaning-based and lexical episodes do *not* involve metalinguistic explanations (Fortune, 2005). Nonetheless, since the learners in the present study have intensively practised the grammatical rules and structures of the language, they have accumulated wider range of metalinguistic knowledge when discussing grammar than meaning or lexis. To find out whether this speculation is correct and whether there is a relationship between the focus of the learners' attention and the number of weighty episodes, a Pearson product-moment correlation was carried out on the number of weighty episodes and the number of grammatical and meaning-based LREs.

Table 7.7 Pearson correlational statistics for the weighty episodes and focus of LREs

		Grammatical LREs	Meaning-based LREs
Weighty LREs	Pearson Correlation	.707	.405
	Sig.(2-tailed)	.001**	.096
	N	18	18

** Correlation is significant at the .01 level (2-tailed).

Table 7.7 shows that there is a strong and significant correlation between the number of grammatical and weighty episodes ($p<.05$). This relationship, however, does not exist between the meaning-based and weighty episodes. Therefore, it can be inferred that the more learners focused on grammar, the more weighty episodes they produced.

Another feature of the LREs involved the *nature* of episodes. As discussed earlier, this category was divided into continuous, discontinuous, embedded and overlapping episodes. Question 2 (d) addressed the number of continuous episodes in the two output groups. Table 7.8 shows the distribution of the nature of episodes in the two groups of learners. What is apparent from this table is that the continuous episodes were produced far more frequently than any other type of episode — discontinuous,

embedded and overlapping episodes — in both groups. By comparing the two groups across the four categories, it seems that their mean scores are different in the continuous and discontinuous episodes.

Table 7.8 Nature of LREs in the two output groups

Continuous	**Mechanical group**	**Meaningful group**
No. of LRES	499	670
% LRE	87.2 %	86.4 %
Mean	55.44	74.44
SD	17.19	19.90
Discontinuous	**Mechanical group**	**Meaningful group**
No. of LRES	33	65
% LRE	5.8%	8.4%
Mean	3.66	7.22
SD	3.67	5.71
Embedded	**Mechanical group**	**Meaningful group**
No. of LRES	24	35
% LRE	4.2%	4.5%
Mean	2.66	3.88
SD	3.00	4.59
Overlapping	**Mechanical group**	**Meaningful group**
No. of LRES	16	6
% LRE	2.8%	0.7%
Mean	1.77	0.66
SD	2.53	1.4

To determine whether these differences are significant, four independent samples t-tests were carried out. The summary of these analyses are presented in table 7.9.

Table 7.9 Summary of the results of between group comparisons on the LRE nature

LREs	*df*	Mean Mechanical	Mean Meaningful	t-value	Sig. (1-tailed)
Continuous	16	55.44	74.44	2.167	.023*
Discontinuous	16	3.66	7.22	1.569	.068
Embedded	16	2.66	3.88	.668	.257
Overlapping	16	1.77	0.66	1.147	.134

*. The mean difference is significant at the .05 level.

The result shows a significant difference in the continuous LREs between the two groups, but the mean number of other subcategories does not seem to be different ($p<.05$). The result supports hypothesis 2d, which stated that the Meaningful group will produce more continuous episodes than the Mechanical group. The higher occurrence of the continuous episodes in the Meaningful output activities might be due to the challenging context of the production, in which the learners might have been encouraged to use focused attention and constantly engage with the activity to solve the problem all at once.

The final stage of analysis concerned the *outcome* of LREs, which was categorised as correct, incorrect and unresolved episodes. Now it might be relevant to know whether the two groups differed in the outcome of the problems they encountered during the completion of the activities. Table 7.10 shows that the majority of the problems were solved correctly by the learners in both groups.

Table 7.10 Outcome of LREs in the two output groups

Correctly solved	**Mechanical group**	**Meaningful group**
No. of LRES	445	592
% LRE	77.8 %	76.3%
Mean	49.44	65.77
SD	16.18	19.49
Incorrectly solved	**Mechanical group**	**Meaningful group**
No. of LRES	92	118
% LRE	16.1%	15.2%
Mean	10.22	13.11
SD	8.10	7.80
Unresolved	**Mechanical group**	**Meaningful group**
No. of LRES	35	66
% LRE	6.1%	8.5%
Mean	3.88	7.33
SD	3.33	6.59

To determine whether there is a significant difference in the mean number of outcome episodes between the two output groups, three independent samples t-tests were carried out. The results are summarised in Table 7.11.

Table 7.11 Summary of the results of between group comparisons on the LRE outcome

LREs	df	Mean Mechanical	Mean Meaningful	t-value	Sig. (1-tailed)
Correctly solved	16	49.44	65.77	1.921	.036*
Incorrectly solved	16	10.22	13.11	.770	.226
Unresolved	16	3.88	7.33	1.398	.090

*. The mean difference is significant at the .05 level.

The table shows that the two groups differed in the mean number of correctly solved episodes, giving support to hypothesis 2 (e), which predicted that the Meaningful output group would produce more correctly solved episodes than the Mechanical group ($p<.003$).

To sum up, the analysis in this section addressed several LRE features: number, type, value, nature and outcome. Except for the weighty episodes, the two output groups differed in all these features. However, it should be noted that there are possible dangers in running multiple t-tests on the same set of data. To answer questions 2a – 2e, I carried out thirteen (13) multiple comparisons on the LRE features, which may have produced type I error (false positive). That is, I may have observed a statistical difference between the two groups, when in truth, there is no difference. One way of preventing type I error is to adjust the significance level (e.g., through Bonferroni adjustment). This is carried out by dividing the significance level ($p<.05$) to the number of independent comparisons being made across the groups ($n=13$). Therefore, the adjusted p value obtained for the sets of comparisons carried out so far should be $p<.003$. With this significance value, the p values obtained for the number of LREs, grammatical, continuous and correctly solved episodes would be nonsignificant. This suggests that the findings reported so far may not be definitive. Nonetheless, Bonferroni adjustment is believed to be too conservative and there is a possibility of underclaiming the number of significant differences with such a low level of significance ($p<.003$). Therefore, to confirm the findings reported in this section, it is recommended that future studies address all LRE features in various output treatments.

7.4 LREs focused on relative clause structure

LREs analysed so far constitute a large number of categories, including meaning-based and orthographic episodes. To understand the extent to which the learners in each group had focused on the target linguistic forms, those LREs which were focused on the structure of RCs were identified and extracted from the data. The subcategories representing RC structure included the following grammatical LREs in the framework: (G1): Choice of relative pronoun ; (G2): Choice of RC; (G3): Formulating a clause; (G4): Omission or retention of the noun or pronoun; (G5): Choice of defining or non-defining RC; (G6): Clause position: right-embedded or centre-embedded clauses; (G7): Finding the referent of the relative pronoun; (G8): Word order; (G9): Subject-verb agreement. These LREs were quantified in the transcripts of the pairs and entered into three separate tables (Tables 7.12, 7.13 and 7.14). These are revealing in several ways. They can show: firstly, which aspects of relative clauses were mainly discussed during interaction; secondly, how activities differed in the amount of attention they produced on the relative clauses; and finally, how the two groups of learners had focused on the target linguistic forms (see also Appendices 18 and 19).

The grammatical episodes focused on RC constitute 50% (n=291) of the total LREs in the Mechanical group, against the 20% of the total LREs in the Meaningful group (n=153). This means that the learners in the Mechanical group more often discussed the structure of RCs than the learners in the Meaningful group did and the learners in the Meaningful group more often discussed linguistic features other than RCs (80%).

Table 7.12 Distribution of the relative clause LREs in the Mechanical pairs

Mechanical	G1	G2	G3	G4	G5	G6	G7	G8	G9	Total
Pair 1	16	0	0	8	7	2	0	0	5	**38**
Pair 2	34	0	0	5	0	1	0	1	2	**43**
Pair 3	16	0	0	4	0	0	0	5	1	**26**
Pair 4	20	0	0	5	0	4	2	7	5	**43**
Pair 5	16	0	0	7	1	0	0	2	2	**28**
Pair 6	13	0	0	4	0	1	0	0	1	**19**
Pair 7	6	0	0	6	0	0	0	1	6	**19**
Pair 8	11	0	0	3	0	2	0	1	2	**19**
Pair 9	41	1	0	10	2	0	1	0	1	**56**
Total RC	**173**	**1**	**0**	**52**	**10**	**10**	**3**	**17**	**25**	**291**

Furthermore, within the RC episodes, the choice of relative pronoun (G1) received the most attention in the Mechanical group (60%). Next after this category comes the omission or retention of the pronoun (G4) with a large distance from the previous category (18%). Other categories which were focused in the learners' discussions are subject-verb agreement (G9), and word order (G8). Choice of defining or non-defining RCs (G5) and clause position (G6) were discussed equally by this group. As we observe, there is a wide variation in the Mechanical group's focus of attention on various relative clause LREs (1—173).

Table 7.13 Distribution of the relative clause LREs in the Meaningful pairs

Meaningful	**G1**	**G2**	**G3**	**G4**	**G5**	**G6**	**G7**	**G8**	**G9**	**Total**
Pair 1	8	0	3	5	0	0	0	3	7	**26**
Pair 2	12	1	6	8	0	0	1	5	4	**37**
Pair 3	5	3	2	3	0	0	1	0	6	**20**
Pair 4	3	0	2	2	0	0	0	0	3	**10**
Pair 5	4	2	0	0	0	1	1	4	3	**15**
Pair 6	10	2	1	0	0	0	0	4	1	**18**
Pair 7	21	1	1	1	0	0	0	1	2	**27**
Pair 8	4	1	1	4	3	0	1	0	2	**16**
Pair 9	7	0	2	1	0	1	0	1	0	**12**
Total RC	**74**	**10**	**18**	**24**	**3**	**2**	**4**	**18**	**28**	**153**

Similarly, in the Meaningful group (see Table 7.15), the majority of LREs were directed towards the choice of the relative pronoun (G1) (48%). The next categories are subject-verb agreement (G9) (18%) and the omission or retention of the pronoun (G4) (16%). Other categories including formulating a clause (G3) and word order (G8) are equal in the amount of attention they received. Unlike the Mechanical group, there is more distribution in this group's focus of attention on relative clause LREs (2—74)

Considering the pairs, pair 9 in the Mechanical group and pair 2 in the Meaningful group produced the highest number of LREs — 56 and 37, respectively. Apart from one learner in the Mechanical pair 9, the three other learners in these two pairs obtained higher gain scores (20, 15 and 12). However, it should be noted that not all LREs resulted in a correct solution; some were incorrectly solved or unresolved. Therefore, it might be the case that the decision that the pairs reached during their interaction might have influenced their performance in the post-test. Previous studies

(e.g., LaPierre, 1994) suggested that when learners reached a solution (correct or incorrect) during interaction, they had a strong tendency to respond similarly to the same item in their subsequent performance. Further consideration of the data revealed that although the highest amount of relative clause LREs was produced by the Mechanical pair 9, almost 40% of their episodes were incorrectly solved. This intensifies the probability that the learners in this group might have provided similar inaccurate responses in their subsequent performance, *i.e.* their post-test session. The design of the present study did not allow me to trace the learners' incorrect resolutions or to examine their possible transfer to subsequent performance, since the

Table 7.14 Total number of the relative clause LREs produced in six activities

Mechanical group	**Total RC LREs**	**Meaningful group**	**Total RC LREs**
Pair 1 (Substitution)	**14**	Pair 1 (Picture description)	12
Pair 1 (Transformation)	**6**	Pair 1 ('Let's complain')	14
Pair 1 (Text-development)	**18**	Pair 1 (Dictogloss)	0
Total	**38**	**Total**	**26**
Pair 2 (Substitution)	**25**	Pair 2 (Picture description)	20
Pair 2 (Transformation)	**12**	Pair 2 ('Let's complain')	16
Pair 2 (Text-development)	**6**	Pair 2 (Dictogloss)	1
Total	**43**	**Total**	**37**
Pair 3 (Substitution)	**12**	Pair 3 (Picture description)	13
Pair 3 (Transformation)	**3**	Pair 3('Let's complain')	7
Pair 3 (Text-development)	**11**	Pair 3(Dictogloss)	0
Total	**26**	**Total**	**20**
Pair 4 (Substitution)	**15**	Pair 4(Picture description)	7
Pair 4 (Transformation)	**15**	Pair 4 ('Let's complain')	3
Pair 4 (Text-development)	**13**	Pair 4(Dictogloss)	0
Total	**43**	**Total**	**10**
Pair 5 (Substitution)	**8**	Pair 5(Picture description)	10
Pair 5 (Transformation)	**15**	Pair 5('Let's complain')	5
Pair 5 (Text-development)	**5**	Pair 5(Dictogloss)	0
Total	**28**	**Total**	**15**
Pair 6 (Substitution)	**6**	Pair 6 (Picture description)	15
Pair 6 (Transformation)	**9**	Pair 6 ('Let's complain')	3
Pair 6 (Text-development)	**4**	Pair 6 (Dictogloss)	0
Total	**19**	**Total**	**18**
Pair 7 (Substitution)	**6**	Pair 7 (Picture description)	17
Pair 7 (Transformation)	**8**	Pair 7 ('Let's complain')	8
Pair 7 (Text-development)	**5**	Pair 7 (Dictogloss)	2
Total	**19**	**Total**	**27**
Pair 8 (Substitution)	**11**	Pair 8 (Picture description)	9
Pair 8 (Transformation)	**3**	Pair 8 ('Let's complain')	7
Pair 8 (Text-development)	**5**	Pair 8 (Dictogloss)	0
Total	**19**	**Total**	**16**
Pair 9 (Substitution)	**26**	Pair 9 (Picture description)	6
Pair 9 (Transformation)	**11**	Pair 9 ('Let's complain')	6
Pair 9 (Text-development)	**19**	Pair 9 (Dictogloss)	0
Total	**56**	**Total**	**12**

learners received feedback on their productions. In the next section (7.5), we will see that the same pair, Mechanical group: pair 9, had noticed the highest number of gaps in their productions. Table 7.14 shows that in the Meaningful group the number of relative clause LREs decreases from the highest in the *picture description* to the lowest in the *dictogloss*. In fact, within the whole group, only three instances of relative clause LREs were produced in the latter activity. This might have some implications for using such Meaningful activities for pre-emptive focus on form when a researcher or teacher intends to provide opportunities for practice in a specific linguistic form.

7.5 Noticing the gaps

A number of instances of *noticing* triggered through feedback (given in the form of corrected worksheets) were identified in the learners' transcripts. The analysis focused on the first level of noticing, i.e. *noticing the gap*, explained in Chapter 2. *Noticing the gap* was operationally defined as those segments of speech in which learners apparently become aware of the gaps in their knowledge and focus their attention on the mismatch between their production and the target language. Such expressions as *oh, I see, aha* were considered as the indicators of the moments that learners were beginning to recognise the problem in their interlanguage. These moments of noticing were initiated by the learners' attending to the changes made on their worksheets, comparing their output to the correct target forms and requesting feedback from their peers or the researcher. Tables 7.15 and 7.16 present the number of noticed features in the six activities by 18 dyads of learners.

Table 7.15 Number of noticed items in the feedback sessions of the Mechanical pairs

Activities		**Mechanical Pairs**									
	P1	P2	P3	P4	P5	P6	P7	P8	P9	**Total**	**Mean**
Substitution	0	8	2	3	2	2	5	1	13	**36**	**4.00**
Transformation	0	1	2	1	1	0	0	3	9	**17**	**1.89**
Test-development	0	6	0	4	0	2	0	1	3	**16**	**1.77**
Total	**0**	**15**	**4**	**8**	**3**	**4**	**5**	**5**	**25**	**69**	**7.66**

Table 7.16 Number of noticed items in the feedback sessions of the Meaningful pairs

Activities		**Meaningful Pairs**									
	P1	P2	P3	P4	P5	P6	P7	P8	P9	**Total**	**Mean**
Picture-description	5	7	9	4	5	11	7	8	6	**62**	**6.88**
'Let's complain'	2	8	5	0	5	5	9	6	6	**46**	**5.11**
Dictogloss	12	3	11	6	3	5	4	12	8	**64**	**7.11**
Total	**19**	**18**	**25**	**10**	**13**	**21**	**20**	**26**	**20**	**172**	**19.1**

By comparing the two tables, we can see that the Meaningful pairs noticed more gaps (172) in their production than the Mechanical pairs did (69). The tables also show that the dictogloss triggered the highest number of noticing instances among all the activities — but not significantly different from the number of noticing instances in the two other Meaningful activities at the .05 level. Furthermore, a wider variation is observed in the total number of noticed features in the Mechanical pairs (range= 0—25) than in the Meaningful pairs (range=10—26).

To find out whether the two groups statistically differ in the mean number of noticed features, they were compared through an independent t-test. The result revealed a significant difference between the two output groups in their mean number of noticed features at the .05 level (t=3.71, df=9, p=.002).

Two explanations can be suggested for the difference in the number of noticed features between the two output groups. Firstly, the Meaningful activities may have been more stimulating than the Mechanical activities in triggering noticing the gaps, by inducing learners to compare their interlanguage with the target language. Secondly, the Mechanical activities could have been too easy for the learners and thus produced little or no mismatch between their production and the target language to allow for comparison. My notes from the observation of the learners during the feedback time indicate that the majority of the pairs in the Mechanical group were reluctant to review their corrected worksheets. This would tend to support the former explanation.

7.6 Time on task, number of LREs and learner progress from pre- to post-test

Learners were initially advised to spend 30 minutes on each activity. However, due to individual differences, they differed, in fact, in the amount of time on task. The exact amount of time that each pair spent on the activities is presented in Appendix 17. Table 7.17 shows the total amount of time spent by nine pairs of learners on each activity. As we can see, the most and the least amount of time were spent on the two Meaningful activities of '*let's complain*' and *dictogloss*, respectively. Table 7.17 also reveals a clear trend of increase in the average time over the activity series for the Mechanical group. Overall, the Meaningful group spent approximately one more hour than the Mechanical group (Mechanical =13.43 hrs, Meaningful=14.33 hrs).

Table 7.17 Total time on task spent by the Mechanical and Meaningful groups

Time on task (mins)	**Mechanical activities**			**Meaningful activities**		
	Substitution	Transformation	Text-development	Picture description	'Let's complain'	Dictogloss
Total	**258**	**270**	**278**	**284**	**329**	**223**
Average	**28.66**	**30**	**30.88**	**31.55**	**36.55**	**24.77**

The comparison of the average minutes spent on each activity through a one way ANOVA showed significant difference in time on task among the activities ($p<.05$). The *post-hoc* LSD comparisons revealed significant contrasts between the pairings of (dictogloss and picture description) and (dictogloss and 'let's complain') at the .05 level of significance.

The next two tables present the total amount of time spent by each pair in the three sessions, the number of LREs they produced and their combined pre-test and post-test scores. Considering the pairs, almost all differed in the total amount of time they spent. The total time ranges from 68 minutes (pair 9 of the Meaningful group) to 126 minutes (pair 4 of the Mechanical group).

Table 7.18 Time on task, total LREs, combined pre-test and post-test scores of the Mechanical pairs

Mechanical pairs	Total time on task	Total number of LREs	Combined pre-test scores	Combined post-test scores
Pair 1	**70** (minutes)	74	70	103
Pair 2	113	91	34	69
Pair 3	102	48	39	73
Pair 4	**126**	**99**	46	59
Pair 5	76	40	31	51
Pair 6	77	**33**	46	63
Pair 7	80	52	75	99
Pair 8	85	61	82	104
Pair 9	77	74	46	73
Total	**806**	**572**	**469**	**694**

Table 7.19 Time on task, total LREs, combined pre-test and post-test scores of the Meaningful pairs

Meaningful pairs	Total time on task	Total number of LREs	Combined pre-test scores	Combined post-test scores
Pair 1	96	119	67	106
Pair 2	103	**120**	39	66
Pair 3	113	110	24	51
Pair 4	77	**55**	46	65
Pair 5	87	58	63	97
Pair 6	**123**	96	38	86
Pair 7	83	80	15	37
Pair 8	86	81	73	103
Pair 9	**68**	57	85	100
Total	**836**	**776**	**450**	**711**

One may ask whether learners who spent more time on the activities produced more LREs. As noted earlier, LREs are by definition a joint production of the learners; they constitute those segments in the speech where learners ask questions, request confirmation and correct each other. As Tables 7.18 and 7.19 show, the total number of LREs varies strikingly from pair to pair, ranging from 33 in the pair 6 of the

Mechanical group to 120 in the pair 2 of the Meaningful group. It is clearly relevant to examine whether spending time has any relationship with the number of LREs produced. To test for this, a Pearson product-moment correlation was carried out on the total number of the minutes the learners spent on their three activities and the number of LREs they produced. Table 7.20 reveals a significant positive correlation between the number of LREs produced by the pairs and the time they had spent on their activities (df=17, p<.05), suggesting that the more time the learners spent on the activities, the more LREs they produced.

Table 7.20 Pearson correlational statistics for the total LREs and time on task

		Time
Total LRE	Pearson Correlation	.654**
	Sig.(1-tailed)	.002
	N	18

** Correlation is significant at the 0.05 level (1-tailed).

It is also possible to examine this relationship in further detail, comparing the relationship between the LREs produced by each output group and the time they had spent.

Table 7.21 Pearson correlational statistics for the total LREs and time on task for each group

		Time (Mechanical)	Time (Meaningful)
Total LRE	Pearson Correlation	.634	.730*
	Sig.(2-tailed)	.067	.025
	N	9	9

* Correlation is significant at the 0.05 level (2-tailed).

As table 7.21 shows, a significant positive relationship is found between the time spent by the Meaningful pairs and the number of LREs they produced (p<.05). This relationship, however, does not seem to exist between the Mechanical pairs' time on task and number of LREs.

The final research question (3) addressed the relationship between the gain scores made by the learners from pre-test to post-test and the number of LREs they

produced. To test for their relationship, I conducted a Pearson product-moment correlation on the combined post-test scores for the pairs and their combined gain scores.

Table 7.22 Pearson correlational statistics for the total LREs and test scores

		Post-test Mechanical pairs	Post-test Meaningful pairs	Gain Mechanical pairs	Gain Meaningful pairs
Total LRE	Pearson Correlation	.042	-.132	.137	.470
	Sig.(1-tailed)	.915	.734	.725	.201
	N	9	9	9	9

The result of this analysis, presented in Table 7.22, showed no significant correlation between the two variables of learning (as measured through pre-test and post-test) and the number of LREs produced.

Another way to approach the relationship between the number of LREs and the learning of RCs is to regroup the learners according to their performance in the pre-testing session. That is, all learners, regardless of their output activity type, can be categorised as *high scorers* (those participants who scored above the mean) and *low scorers* (those participants who scored below the mean) at the pre-testing session. The mean score for all participants as a group (n=36) was 25.5. Half of the learners scored below the mean and the other half scored above the mean in each output group. The total number of LREs was entered twice into the calculation, once for each member of the pair belonging to either high scorer or low scorer group. Table 7.23 shows the result of the correlational analysis using Pearson product moment correlation on the number of LREs and the high and low scorers' gain scores on the test.

Table 7.23 Pearson correlational statistics for the total LREs and high and low scorers

		High scorers' gain scores	Low scorers' gain scores
Total LRE	Pearson Correlation	-.102	.481*
	Sig.(2-tailed)	.686	.043
	N	18	18

* Correlation is significant at the 0.05 level (2-tailed).

The table reveals a significant correlation between the number of LREs produced and the gain scores made by the low scorers from the pre-test to the post-test ($p<.05$). This means that the more LREs the low scorers produced during their practice sessions, the more gains they made on their post-tests. However, this does not seem to be true for the high scorers, since no significant correlation was observed between their gains and total LREs they produced. Thus, it can be tentatively concluded that LREs are related to second language learning in a particular way, that is, learners at lower proficiency levels progress more if they produce more LREs. The research hypothesis (3) is, therefore, partially supported.

7.7 Summary and discussion

The general performance of the two groups was found to be significantly different ($p<.05$), with the Meaningful group outperforming the Mechanical group in all LRE features except for the grammatical and weighty episodes. The Meaningful output, in general, generated more discussions (58% of total LREs) compared to the Mechanical output (42%). With respect to the focus of attention, the comparison of the mean number of grammatical and meaning-based LREs across the two groups revealed that the grammatical LREs were produced more frequently in the Mechanical output activities and the meaning-based LREs were produced more frequently in the Meaningful output activities. The two groups did not differ in the average number of orthographic episodes. The order of the activities in generating grammatical and meaning-based episodes from the highest to the lowest in number is as follows:

Grammatical LREs:

Picture-description	substitution	text-development	'let's complain'	transformation	dictogloss
S1	S1	S3	S2	S2	S3

Meaning-based LREs:

Picture-description	'let's complain'	dictogloss	text-development	substitution	transformation
S1	S2	S3	S3	S1	S2

It is interesting to note that in designing the activities along a continuum (see Chapter 2), my intention was that the learners would increase their attention to meaning as they approach the end of the series of sessions (i.e. from session one to three). The order of the activities in generating the meaning-based LREs reveals that the activities had approximately fulfilled this objective.

Analysis of the value/weight of episodes revealed that there was a significant difference in the number of light episodes produced in the two sets of activities with more being produced in the Meaningful activities. The two groups, however, did not differ in the mean number of weighty episodes. It was speculated that there might be a relationship between the number of grammatical and weighty episodes. The result of a correlational analysis confirmed this assumption, suggesting that the more grammatical episodes the learners produced, the more weighty their episodes were. With respect to the nature and outcome of episodes, the majority of the episodes were continuous and correctly solved in both groups. This means that, in most of the times, when learners encountered a linguistic problem and started discussion on a point, they did not give up the discussion until they solved the problem. Comparison of the mean number of nature and outcome episodes showed significant differences between the two groups in the subcategories of continuous and correctly solved episodes.

Following the examination of the learners' discussion during task performance, a further analysis was carried out on the feedback session. Instances of noticing the gap were identified and quantified in each pair's interaction. Comparison of the two groups revealed that the Meaningful group, noticed significantly more gaps in their interlanguage than did the Mechanical group ($p<.05$).

The time spent on the activities and the number of LREs produced differed between and within the groups. Overall, the Meaningful pairs spent more time than did the Mechanical pairs. The most and the least amount of time were spent on the 'let's complain' and *dictogloss* activities, respectively. The correlational analyses revealed a positive significant correlation between the amount of time spent by the

Meaningful pairs and the number of LREs they produced. However, no significant correlation was found between the number of LREs and the combined post-test scores of the learners in each output group. A further consideration of the data at this stage revealed that half of the learners scored above the mean and the other half scored below the mean in each output group. This allowed me to categorise the participants (regardless of their initial grouping as the two output groups) as high scorers and low scorers, representing those learners who scored above and below the mean in the pre-test, respectively. The result of a correlational analysis showed a significant positive correlation between the gain scores of the low scorers and the number of LREs they produced. This suggests that the more LREs they produced, the more progress they made in the learning of the target feature. However, the same relationship was not true for high scorers, which may suggest that the benefits of producing more LREs may be constrained to those learners whose ability in a particular structure is below the average of the group.

Table 7.24 LRE Results for the Mechanical Group

	Grammar	Meaning-based	Orthographic	Identification	Discourse	Total LRE	Light	Weighty	Continuous	Discontinuous	Embedded	Over-lapped	Correctly solved	Incorrectly solved	Unresolved	Noticing
Mech1 Session1	20	1	2	0	0	**23**	12	11	21	0	0	2	15	7	1	0
Mech1 Session2	11	1	3	0	0	**15**	10	5	15	0	0	0	12	2	1	0
Mech1 Session3	30	5	1	0	0	**36**	17	19	26	3	3	4	26	7	3	0
Total	**61**	**7**	**6**	**0**	**0**	**74**	**39**	**35**	**62**	**3**	**3**	**6**	**53**	**16**	**5**	**0**
Mech2 Session1	28	7	4	0	0	**39**	15	24	30	3	4	2	29	8	2	8
Mech2 Session2	24	1	5	0	0	**30**	20	10	17	5	6	2	24	4	2	1
Mech2 Session3	13	4	5	0	0	**22**	19	3	17	3	0	2	12	7	3	6
Total	**65**	**12**	**14**	**0**	**0**	**91**	**54**	**37**	**64**	**11**	**10**	**6**	**65**	**19**	**7**	**15**
Mech3 Session1	13	2	1	0	0	**16**	12	4	13	1	0	2	11	4	1	2
Mech3 Session2	9	0	0	0	0	**9**	9	0	7	1	1	0	6	2	1	2
Mech3 Session3	17	5	1	0	0	**23**	15	8	23	0	0	0	18	4	1	0
Total	**39**	**7**	**2**	**0**	**0**	**48**	**36**	**12**	**43**	**2**	**1**	**2**	**35**	**10**	**3**	**4**
Mech4 Session1	21	6	5	0	0	**32**	17	15	28	3	1	0	24	2	6	3
Mech4 Session2	23	2	2	0	0	**27**	14	13	23	2	2	0	23	4	0	1
Mech4 Session3	26	12	2	0	0	**40**	26	14	35	4	1	0	34	2	4	4
Total	**70**	**20**	**9**	**0**	**0**	**99**	**57**	**42**	**86**	**9**	**4**	**0**	**81**	**8**	**10**	**8**
Mech5 Session1	9	1	1	0	0	**11**	10	1	11	0	0	0	7	3	1	2
Mech5 Session2	18	0	2	0	0	**20**	18	2	18	1	1	0	18	2	0	1
Mech5 Session3	6	2	1	0	0	**9**	9	0	9	0	0	0	8	1	0	0
Total	**33**	**3**	**4**	**0**	**0**	**40**	**37**	**3**	**38**	**1**	**1**	**0**	**33**	**6**	**1**	**3**
Mech6 Session1	7	1	1	0	0	**9**	7	2	9	0	0	0	8	1	0	2
Mech6 Session2	12	2	2	0	0	**16**	13	3	15	1	0	0	15	1	0	0
Mech6 Session3	7	0	1	0	0	**8**	8	0	8	0	0	0	8	0	0	2
Total	**26**	**3**	**4**	**0**	**0**	**33**	**28**	**5**	**32**	**1**	**0**	**0**	**31**	**2**	**0**	**4**
Mech7 Session1	11	1	1	0	0	**13**	8	5	13	0	0	0	12	1	0	5
Mech7 Session2	16	2	0	0	0	**18**	10	8	16	0	0	2	17	1	0	0
Mech7 Session3	17	3	1	0	0	**21**	12	9	17	2	2	0	17	2	2	0
Total	**44**	**6**	**2**	**0**	**0**	**52**	**30**	**22**	**46**	**2**	**2**	**2**	**46**	**4**	**2**	**5**

Table 7.24 LRE Results for the Mechanical Group (Continued)

	Grammar	Meaning-based	Orthographic	Identification	Discourse	Total LRE	Light	Weighty	Continuous	Discontinuous	Embedded	Over-lapped	Correctly Solved	Incorrectly solved	Unresolved	Noticing
Mech8 Session1	17	2	5	0	0	**24**	20	4	23	1	0	0	23	1	0	1
Mech8 Session2	10	1	2	0	0	**13**	11	2	13	0	0	0	12	1	0	3
Mech8 Session3	9	15	0	0	0	**24**	20	4	22	1	1	0	18	0	6	1
Total	**36**	**18**	**7**	**0**	**0**	**61**	**51**	**10**	**58**	**2**	**1**	**0**	**53**	**2**	**6**	**5**
Mech9 Session1	26	3	1	0	0	**30**	20	10	26	2	2	0	19	10	1	13
Mech9 Session2	18	0	0	0	0	**18**	15	3	18	0	0	0	10	8	0	9
Mech9 Session3	24	2	0	0	0	**26**	23	3	26	0	0	0	19	7	0	3
Total	**68**	**5**	**1**	**0**	**0**	**74**	**58**	**16**	**70**	**2**	**2**	**0**	**48**	**25**	**1**	**25**
	442	**81**	**49**	**0**	**0**	**572**	**390**	**182**	**499**	**33**	**24**	**16**	**445**	**92**	**35**	**69**

Table 7.25 LRE Results for the Meaningful Group

Meaningful Pairs	Grammar	Meaning-based	Orthographic	Identification	Discourse	Total LRE	Light	Weighty	Continuous	Discontinuous	Embedded	Over-lapped	Correctly Solved	Incorrectly solved	Unresolved	Noticing
Mean1 Session1	15	19	3	0	0	**37**	17	20	25	6	4	2	33	3	1	5
Mean1 Session2	25	27	4	0	0	**56**	34	22	36	7	11	2	47	6	3	2
Mean1 Session3	2	8	1	10	5	**26**	23	3	24	2	0	0	17	5	4	12
Total	**42**	**54**	**8**	**10**	**5**	**119**	**74**	**45**	**85**	**15**	**15**	**4**	**97**	**14**	**8**	**19**
Mean2 Session1	31	19	5	0	0	**55**	35	20	46	3	4	2	42	10	3	7
Mean2 Session2	24	20	0	0	0	**44**	26	18	40	2	2	0	35	5	4	8
Mean2 Session3	6	8	1	6	0	**21**	20	1	20	1	0	0	9	10	2	3
Total	**61**	**47**	**6**	**6**	**0**	**120**	**81**	**39**	**106**	**6**	**6**	**2**	**86**	**25**	**9**	**18**
Mean3 Session1	19	25	0	0	0	**44**	36	8	40	3	1	0	24	7	13	9
Mean3 Session2	20	19	1	0	0	**40**	17	23	33	5	2	0	35	4	1	5
Mean3 Session3	2	14	1	7	2	**26**	24	2	16	10	0	0	17	2	7	11
Total	**41**	**58**	**2**	**7**	**2**	**110**	**77**	**33**	**89**	**18**	**3**	**0**	**76**	**13**	**21**	**25**

Table 7.25 LRE Results for the Meaningful Group (Continued)

	Grammar	Meaning-based	Orthographic	Identification	Discourse	Total LRE	Light	Weighty	Continuous	Discontinuous	Embedded	Over-lapped	Correctly Solved	Incorrectly solved	Unresolved	Noticing
Mean4 Session1	11	11	1	0	0	**23**	21	2	21	1	1	0	16	6	1	4
Mean4 Session2	15	8	0	0	0	**23**	20	3	23	0	0	0	16	5	2	0
Mean4 Session3	0	8	0	1	0	**9**	9	0	6	3	0	0	8	1	0	6
Total	**26**	**27**	**1**	**1**	**0**	**55**	**50**	**5**	**50**	**4**	**1**	**0**	**40**	**12**	**3**	**10**
Mean5 Session1	12	10	0	0	0	**22**	17	5	19	2	1	0	18	2	2	5
Mean5 Session2	10	12	4	0	0	**26**	21	5	22	2	2	0	26	0	0	5
Mean5 Session3	2	3	0	5	0	**10**	9	1	10	0	0	0	7	2	1	3
Total	**24**	**25**	**4**	**5**	**0**	**58**	**47**	**11**	**51**	**4**	**3**	**0**	**51**	**4**	**3**	**13**
Mean 6 Session1	20	27	2	0	0	**49**	34	15	43	4	2	0	33	10	6	11
Mean 6 Session2	10	24	2	0	0	**36**	28	8	31	3	2	0	27	1	8	5
Mean 6 Session3	1	5	0	4	1	**11**	10	1	9	2	0	0	6	5	0	5
Total	**31**	**56**	**4**	**4**	**1**	**96**	**72**	**24**	**83**	**9**	**4**	**0**	**66**	**16**	**14**	**21**
Mean 7 Session1	21	12	4	0	0	**37**	31	6	35	2	0	0	27	10	0	7
Mean 7 Session2	16	9	2	0	0	**27**	23	4	26	1	0	0	19	8	0	9
Mean 7 Session3	3	4	1	8	0	**16**	15	1	15	1	0	0	6	6	4	4
Total	**40**	**25**	**7**	**8**	**0**	**80**	**69**	**11**	**76**	**4**	**0**	**0**	**52**	**24**	**4**	**20**
Mean 8 Session1	15	18	2	0	0	**35**	27	8	35	0	0	0	34	1	0	8
Mean 8 Session2	19	11	2	0	0	**32**	28	4	32	0	0	0	32	0	0	6
Mean 8 Session3	2	10	0	2	0	**14**	13	1	13	1	0	0	11	3	0	12
Total	**36**	**39**	**4**	**2**	**0**	**81**	**68**	**13**	**80**	**1**	**0**	**0**	**77**	**4**	**0**	**26**
Mean 9 Session1	11	9	0	0	0	**20**	17	3	20	0	0	0	17	2	1	6
Mean 9 Session2	9	11	1	0	0	**21**	20	1	16	2	3	0	16	2	3	6
Mean 9 Session3	4	7	0	5	0	**16**	16	0	14	2	0	0	14	2	0	8
Total	**24**	**27**	**1**	**5**	**0**	**57**	**53**	**4**	**50**	**4**	**3**	**0**	**47**	**6**	**4**	**20**
	325	**358**	**37**	**48**	**8**	**776**	**591**	**185**	**670**	**65**	**35**	**6**	**592**	**118**	**66**	**172**

CHAPTER 8

Comparison of the pairs and the activities

This chapter examines the effect of collaborative production of output on the generation of learning opportunities. To this end, the analysis will focus on the interactions and behaviours of the learners participating in the study. Furthermore, the various activities will be examined in terms of their effectiveness in stimulating discussion and focusing the learners' attention on the target linguistic forms. While the learners in the two groups achieved similar gains from the pre-test to the post-test, their tape-recorded interactions revealed some differences in the pattern of collaboration. It is the purpose of this chapter to explore the pairs and the activities from a variety of perspectives. The analysis will be supported by excerpts from the transcribed pair-talk.

8.1 Characteristics of the collaborative output

The nature of the exchanges between the learners might reveal useful information about the impact of interaction on the L2 learning process. To have a clear idea of the pattern of collaboration between the learners, the analysis adopts Storch's (2002a) model of interaction, which identified four patterns in dyadic interaction: collaborative, dominant/dominant, dominant/passive and expert-novice. It should be noted that the present study does not aim to investigate these patterns in the pair interaction; instead, the established categorisation will be used on an ad hoc basis to illuminate discussions where useful. To determine whether all the learners benefited from their interaction, and whether they had equally contributed to the activity, their discourse is examined in terms of collaboration, metatalk, rule explanations, corrections, hypothesis testing, repetition, overlap, use of L1, private speech and respect and humour.

8.1.1 Collaborative completion of utterances

Collaborative completion of utterances is evident in most of the interactions of the collaborative pairs. Pairs of learners are engaged in joint creation of an utterance during which one learner completes the other learner's utterance. Excerpt 1 from Meaningful pair 8 illustrates this process. The sentence that K began (turn 1) is completed by P (turns 2 & 4) (L stands for line number).

Excerpt 1. Formulating a clause (Meaningful pair 8, session1, L342-345)

1. →**K**: A banana is a fruit that
2. →**P**: That monkey
3. **K**: Monkey
4. →**P**: Likes it.

Numerous instances of collaboration can be observed in the interactions of the learners. Excerpt 2 shows how K and N bounce their knowledge off one another until they reach the correct solution.

Excerpt 2. Formulating a clause (Meaningful pair 1, session1, L349-354)

1. →**K**: I have read Hamlet
2. →**N**: Uhm, was written, which
3. **K**: Which
4. →**N**: Was written
5. →**K**: By
6. →**N**: Shakespeare.

Collaboration takes place in all linguistic areas including grammar and vocabulary. In excerpt 3, when M seeks assistance in finding the right word, Z offers help and M immediately incorporates it into her sentence.

Excerpt 3. Vocabulary search (Meaningful pair 2, session 2, L918-928)

1. **Z**: The party which
2. **M**: *Davat shodim* we invited to

We were invited

3. **Z**: We invited?
4. **M**: Invited to was
5. **Z**: Was
6. → **M**: *Che juri bud party?*
   → **How was the party?**
7. → **Z**: Fantastic.
8. **M**: Fantastic.
9. **Z**: Was very fantastic.

Pair 3 in the Mechanical group is also very cooperative. They build on each other's knowledge and produce joint responses, as in excerpt 4:

Excerpt 4. Pronoun omission or retention (Mechanical pair 3, session 1, L247-257)

1. → **H**: Our national team
2. **M**: Our national team
3. **H**: Who play for
4. → **M**: Who (.) who play?
5. → **H**: Our national team who play for (.) will go to Germany? <u>That</u> play for
6. → **M**: That he play for
7. **H**: That he play for, that he play for.
8. **M**: That **they** play for
9. **H**: He, he, will go to Germany dige? *Chera* they?
   Why 'they'?
10. **M**: They play (.) for will go to Germany.

M produces a recast of H's utterance prompting her to replace *who* with *that* (turn 4). Following that, M provides the subject pronoun *he,* which is necessary for sentence completion. M notices that there is more than one person in the picture and therefore modifies her output, producing the sentence with *they*. As is clear from this example, each learner supplies a part of the response until they come up with a well-formed sentence. Similarly, in Meaningful pair 1 (excerpt 5), K values N's contribution and includes her response *repair* inside parentheses.

Excerpt 5. Choice of lexical items (Meaningful pair 1, session 1, L91-99)

1. **K**: A mechanic is someone
2. **N**: A mechanic is someone
3. **K**: Who mend *tameer mikone*

   mends
4. → **N**: Repair *ham mitunim bezarim, areh?*

   We can also use 'repair'. Yes?
5. → **K**: Or repair [writes inside parentheses]
6. **N**: The car
7. **K**: The car.

Collaborative completion of utterances is not observed between some learners, particularly in their first session. For example, in Meaningful pair 9, it is the dominant member of the pair (S) who appropriates the activity. Assistance is often rejected by this member and therefore, most of the sentences are, in fact, productions of one learner (S). As is clear from Excerpts 6 and 7, S rejects Z's offer and uses her own response on most occasions.

Excerpt 6. Formulating a clause (Meaningful pair 9, session1, L145-151)

1. **Z**: A rooster is a bird
2. → **S**: A rooster is a bird which (..) is a bird which (..) which is, a rooster is a bird
3. → **Z**: *Che kar mikone? (.) bidar mikone ba sedash.*

   What does it do? (.) Wakes up with its sound,
4. →**S**: *Na,* a rooster is a bird which can sing

   No,
5. **Z**: Can sing.

Excerpt 7. Formulating a clause (Meaningful pair 9, session 2, L194-202)

1. → **S**: Car drive, the car that I
2. **Z**: Drive
3. **S**: Drive drive
4. → **Z**: *Tameer shode.*

   Was repaired
5. **S**: The car that I drove drive drove *mishe dige gozashteash?*

The past tense of 'drive' is 'drove', isn't it?

6. **Z**: Uhm
7. → **S**: Drove yesterday is broken down.

However, this pattern of interaction changes in their third activity, *i.e.* dictogloss. Any piece of information that helps the reconstruction of the text is of crucial importance for both learners, so S willingly incorporates Z's language into the text.

Excerpt 8. Formulating a clause (Meaningful pair 9, session 3, L108-120)

1. → **S**: My computer, computer was down, the man
2. **Z**: Didn't
3. **S**: Couldn't
4. → **Z**: Couldn't repair
5. **S**: Couldn't repair it and I
6. **Z**: It *it ham miyarim?*

   Do we bring 'it' too?
7. → **S**: *Areh.* I have to take

   Yes.
8. → **Z**: It back.
9. **S**: It

8.1.2 Meta-talk and rule explanation

Learners consciously reflect on and talk about the language they are producing. This reflection, as Fortune (2005) has discussed, might be achieved with or without expressing grammatical rules and terminology. Such requests as *how do you say x*? and *what is the past tense of z*? are frequently found in the learners' discussions (see an example of this in excerpt 7 above). Sometimes, they use grammatical rules to justify their decisions and convince each other.

In Excerpt 9, the learners discuss the omission or retention of the pronoun. As mentioned in Chapter 4, unlike Farsi, English does not allow the resumption of the co-referential noun or pronoun in the standard usage. Note how M supplies a correct

answer by drawing on her linguistic knowledge and explaining the relevant grammatical rule (turn 4).

Excerpt 9. Omission/retention of pronoun (Mechanical pair 1, session 3, L173-182)

1. **E**: There were one or two people
2. **M**: I didn't like them, that I didn't like
3. **E**: That I didn't like↑
4. → **M**: *Marjae zamire mosuli nabayad badesh biyad ha.*
   → **The referent of the relative pronoun doesn't come after it.**
5. **E**: Didn't
6. **M**: Like
7. → **E**: *Pas in ham bayad cheez konim.*
   So we have to change this *thing* [she means sentence].
8. **M**: *Bale unham khatesh bezan. Dorost-e.*
   Yes, omit that one too. It is correct now.

After receiving the feedback, E suggests applying this realisation to all their previous responses (turn 7) and M agrees with her. The provision of rules is mutual and sometimes it is the other peer who suggests the rule that should be applied. In excerpt 10, the same pair is trying to connect a sentence (*she had ever been to the camp*) to a part of the text (*That was the first camp…..*) using relative pronouns. M suggests using *whom* instead of *which*; however, E directs M's attention to the referent of the pronoun and explains that *who* can not be used for *camp*. It is clear from the two excerpts that the two learners are assisting each other by drawing on their metalinguistic knowledge and offering correct grammatical rules.

Excerpt 10. Choice of the relative pronoun (Mechanical pair 1, session 3, L149-162)

1. **E**: *Modate kami bude ke un tush bude.*
   It was a short time that she had been there.
2. **M**: *Pas* which *nist* whom-*e*
   So it is not 'which' it is 'whom'
3. **E**: Whom-e?
   Is it 'whom'?
4. **M**: *Ya* who-e. *Man migam farq nemikone* who *ya* whom

Or it is 'who', I think there is no difference between 'who' or 'whom'.

5. → **E**: *Akhe bebin in* camp *bara* camp who *nemiyarim.*

But look here, for camp, we can't use 'who' for camp.

6. **M**: That was the first, umm, that was the first camp *aslan aqa jun* that *bezar*

Ok, let's put 'that'.

that she had been

7. → **E**: *Dar bareye* camp *ma darim ettelaat midim*

We are giving information about the camp.

Most of the learners refer to their linguistic knowledge and articulate grammatical rules and terminology to solve their problems. As Webb (1989) has noted, the act of providing explanations can help learners clarify and organise their own understanding of the problem. In Excerpt 11, S refers to the replacement of the redundant pronoun by the relative pronoun (turns 7 and 13). The provision of this rule results in the correct resolution of the linguistic problem.

Excerpt 11. Omission/ retention of pronoun (Mechanical pair 7, session 2, L243-258)

1. **S**: These are Indian friends
2. **L**: These are Indian friends that I helped them.
3. **S**: Indian
4. **L**: That I helped
5. **S**: *Areh dige dige nemikhad biyarim.*

Yes. There is no need to use it.

6. **L**: *Man komakeshun kardam.*

I helped them.

7. → **S**: *Chun inha jaye maful miyad dige.*

Because these [pronouns] replace the object

8. **L**: *Naa inja bayad biyad bavaar kon.* These are Indian friends

No, believe me, it should be here.

9. **S**: [That
10. **L**: [That I helped.
11. **S**: I helped-
12. **L**: I, I, I helped
13. → **S**: *Chun jaye maful miaad dige.*

→ **Because it [that] comes instead of the object.**

14. **L**: *Areh*

Yes

15. **S**: That

16. **L**: I helped

17. **S**: I helped.

Application of rules may also depend on the individual learner's source of knowledge. As Storch (1998) has pointed out, learners draw on various knowledge resources to solve their problems. These include grammar, meaning, context, intuition, analogy and a combination of them. Sometimes the expressions that learners use imply their source of knowledge. For example, one member of the Mechanical pair 4 (S), used the expression '*it doesn't make sense* or *it makes more sense*' 37 times in her exchanges. This expression might imply that she is more relying on her intuition than grammatical knowledge. Some other pairs, for example Mechanical pair 5, resort to the meaning of the sentences to solve their problems (see also excerpt 66). In Excerpt 12, T is hesitant about using the sentence without the pronoun *it*. She requests confirmation several times (turns 3, 5), and Z produces the meaning of the sentence in Farsi and suggests leaving out the pronoun. Although the problem is solved correctly in Z's view, it still seems to be unresolved for T.

Excerpt 12. Omission/retention of pronoun (Mechanical pair 5, session 2, L240-255)

1. **T**: This is a elephant, children [that

2. **Z**: [that children loved.

3. → **T**: This is a elephant that ↑

4. **Z**: That children loved *hamin* loved.

Just this

5. → **T**: Loved it?

6. → **Z**: *Naa. Mige un filiye ke*

No, it says it is the elephant that

7. **T**: *Bacheha dust daranesh*

Children like it

8. **Z**: *Ke dust*

That like

9. **T**: *Dust dashtanesh*

Liked it

10. → **Z**: *Doroste, velesh kon.*

It is correct. Leave it.

It should be mentioned that sometimes learners not only possess inappropriate metalinguistic knowledge, but also extend it to similar structures they are producing. The source of knowledge, although correct in some instances, does not necessarily contribute to L2 learning process. An example of inaccurate grammatical knowledge is illustrated in the following excerpt.

Excerpt 13. Choice of relative pronoun (Mechanical pair 9, session 1, L179-189)

1. **S**: A chef is someone who cook food. Ha?
2. **M**: Uhm.
3. **S**: *Sevvomi*, a conductor is someone, direct orchestra

Third

4. **M**: Orchestra, direct
5. **S**: Direct
6. → **M**: *Hedayat mikard baz fele dige.* [Who *mishe*

Direct, it is a verb again. It is 'who'

7. **S**: [Who who *mishe*

['who', it is 'who'

In this example, M considers the verbs *cook* and *direct* and decides to use subject pronoun *who* (turn 6). In fact, there is an inappropriate rule for learning relative pronouns which some English teachers propose at high school level. Instead of clarifying the co-reference of the pronoun *who*, they suggest applying the following rule: [whenever you see a verb after a blank, use *who* and whenever you see a pronoun or noun after a blank, use *whom*]. This simplistic rule might help the learner in choosing the correct pronouns for the following clauses (a) and (b):

a) The man..... came

b) The man..... she saw

However, it does not seem to help them in the correct application of non-human (*which*) and genitive (*whose*) relative pronouns. Furthermore, the learners might extend this rule to similar structures. An example of incorrect extension of the above rule occurs in the following excerpt.

Excerpt 14. Choice of relative pronoun (Mechanical pair 2, session 1, L361-374)

1. **M**: *Hamun capsule atashneshaniye.*
   It means extinguisher.
2. **B**: *x jomle x.* fire, *in capsule atashneshani* is
   Sentence This extinguisher 'is'
3. **M**: *Az chee estefade kardi*?
   What did you use for it?
4. → **B**: Is something *hala in shakhse,* who
   Now, here is a human, 'who'
5. **M**: Who
6. **B**: *Ke*
   Who
7. **M**: Fireman
8. **B**: Fireman [uses.
9. **M**: [uses.

Following the same rule, B considers the word 'after the blank' (fireman) and decides to use *who* (An extinguisher is something.....fireman uses) (see turn 4). Although they are correctly applying the relative pronoun based on the mentioned rule, their disregard of the antecedent head noun (*extinguisher*) results in incorrect production of the relative pronoun. Learners solved a large number of problems incorrectly, due to incorrect identification of the referent of relative pronouns. A similar problem arises in Excerpt 15.

Excerpt 15. Choice of relative pronoun (Mechanical pair 2, session 1, L375-387)

1. **B**: *Estefade mikone.* A tank
   Uses
2. **M**: Soldier and drive.
3. **B**: Is

4. **M**: A tank
5. **B**: Something
6. → **M**: <u>Which</u>
7. → **B**: <u>Who</u>, who↑
8. **M**: xx *sarbaz*

Soldier

9. → **B**: *Ahan fahmidam sarbaz* [who

<u>I got it. Soldier [who</u>

10. **M**: [who soldier

In the above excerpt, although M suggests the correct response (turn 6), B rejects it by offering *who* with a rising intonation (turn 7). Then, B confirms the response after realising that the 'blank' is followed by *soldier* (turn 9) and applies *who,* which is overlapped with M's turn.

Therefore, as Qi and Lapkin (2001: 279) have noted, the substance of the learners' thoughts is sometimes incorrect, 'leading to incorrect hypotheses and inappropriate generalizations'. As a result, provision of the rule may provide learning opportunities so long as the learners possess correct grammatical rules and meta-linguistic knowledge.

8.1.3 Other- and self-corrections

Another feature of collaborative output is that learners offer and receive corrective feedback. In the present study, the correction takes three forms in the exchanges between the learners. In one form, both learners mutually correct each other. They accept the corrections and seem to be comfortable when being corrected. The schematic diagram for this pattern can be shown as follows:

Pattern 1: ☻↔☻ (Reciprocal)

The data reveals that the majority of the collaborative pairs fall into the first category. Meaningful pair 8, for example, maintains a supportive discourse by

correcting each other. Note how K encourages P by saying *yes* to her contribution (turn 3) and correcting her utterance later (turn 5).

Excerpt 16. Verb tense (Meaningful pair 8, session 2, L267-271)

1. **K**: The dinner that I ate last night
2. **P**: That I ate last night <u>make</u> me sick
3. → **K**: Yes, the dinner that I
4. **P**: Ate last night
5. → **K**: <u>Made</u> me
6. **P**: Ill or sick,

The learners switch roles in the following exchange, this time with P correcting K.

Excerpt 17. Verb tense (Meaningful pair 8, session 2, L94-97)

1. **P**: Books, expensive
2. **K**: The books that I selected in a, in book fair <u>are</u> very expensive.
3. → **P**: <u>Were</u>, <u>were</u>
4. **K**: Were very expensive.

In the second form, one member does the correcting and she either rarely makes a mistake or self-corrects herself immediately after making a mistake. In this pattern, the learner who monitors her language as well as her partners', often requests for confirmation of her utterances. The diagram below shows this pattern.

↓

Pattern 2: ☺ → ☻ (self- and other-monitoring)

Mechanical pair 1 illustrated an example of the second pattern, where E was correcting M in most of their exchanges. In the following example, E explicitly corrects M's language and offers the correct clause form (turn 6).

Excerpt 18. Formulating a clause (Mechanical pair 1, session 1, L 245-252)

1. **M:** A bag is something
2. **E:** That

3. **M:** That,
4. **E:** Keeps your money↑
5. → **M:** Aha, you, no, that took your money.
6. → **E:** *Na, na* that *you* [keep money in.
   No, no
7. **M:** [keep money in. Yes, that you

Unlike M, E is very hesitant in testing her hypothesis; she rarely makes a mistake and does not give a chance to M to correct her language. Mechanical pair 6 shows the same pattern of correction. In this pair, the majority of corrections are carried out by R and A simply accepts them without further questioning. As an example, Excerpt 19 shows that R corrects two aspects of A's production.

Excerpt 19. Choice of relative pronoun and subject-verb agreement (Mechanical pair 6, session 1, L91-99)

1. **A:** A bee is an animal (.) <u>who</u> or
2. → **R:** *Who na dige, fagat that.*
   → **<u>Not 'who'</u> just 'that'**
3. **A:** *Chee?*
   What?
4. **R:** That
5. **A:** *Ahan that-e.* <u>That *make*</u> honey.
   Ahan, it is 'that'.
6. → **R:** That <u>makes</u> honey

In the next excerpt, A submits an incorrect RC form with redundant pronoun *these* (turns 9 & 11), R corrects not only the pronoun but also the pronunciation of the word.

Excerpt 20. Omission or retention of pronoun and pronunciation (Mechanical pair 6, session 2, L124-145)

1. **A**: *Khub*, These are, these are
   OK
2. **R**: *Khub.*
   OK
3. **A**: People, people
4. **R**: *Khub.*

OK

5. **A**: That
6. **R**: Who *ham mishe.*

'who' is also correct.

7. **A**: Who
8. **R**: *Khub.*

OK

9. → **A**: Who these
10. → **R**: These *dige nemikhad.*

No need to write 'these'.

11. → **A**: Who these /severed/ us. Who these /severed/ us.
12. → **R**: Who served us

Although A is contributing to the task, it seems that she is less attentive and is not deeply processing the incoming feedback from R. In spite of their several exchanges on the omission of the pronoun, A still seems to have problem in recognising the pronoun which has to be omitted from the sentence. Therefore, she suggests omitting the pronoun *me* from the sentence (turn 4). However, R rejects her suggestion and rightly gives the reason.

Excerpt 21. Omission/retention of pronoun (Mechanical pair 6, session 2, L205-212)

1. **R**: Is very beautiful. This is the Colva Beach (.)
2. **A**: This is the co-
3. → **R**: Which (.) my friend introduced. *Me ham benevis.* Introduced me.

Write 'me' too.

4. → **A**: *Nemikhad me ro benevisim.*

There is no need to write 'me'.

5. **R**: *Chera dige benevis. Akhe be cheez ke barnemigarde. Be sahele ke barnemigarde.*

Why, write, but it doesn't refer to *thing*. It doesn't refer to beach.

This is a potential site of learning where A might have benefited by further questioning and requesting information. The result of their post-test shows that, unlike R, who made substantial progress, A did not make any progress from the pre-

test to the post-test. This might be, to some extent, due to the nature of their exchanges, which did not involve complex reasoning about the language they were producing. This is also evidenced in the low number of weighty episodes (n=5) compared to light episodes (n=28) produced during their interaction in three sessions (see Table 7.23).

In the third form of correction, one learner again corrects the other learner but her own mistakes remain unnoticed. The schematic diagram for this pattern is as follows:

Pattern 3: ☻ → ☻ (Non-selfmonitoring, dominant)

Meaningful pair 4, for instance, exhibits this pattern of correction. In this pair, M, the dominant member of the pair corrects both lexical and grammatical aspects of S's utterance. S accepts this correction without any resistance.

Excerpt 22. Subject-verb agreement (Meaningful pair 4, session 1, L138-146)

1. **S**: Uhm, a waiter is someone who or that
2. **M**: *Chee gofte? Gofte* a waiter is someone who or that
   What does it say? It says
3. → **S**: Give a order.
4. → **M**: Take
5. **S**: Take the order.
6. → **M**: A waiter is someone who takes *-e*.
   It is 'takes'.
7. → **S**: Takes.
8. **M**: Order.

Sometimes M provides negative feedback (e.g., emphatic *no*) on S's output and prompts her to edit her utterance (turn 4).

Excerpt 23. Verb form (Meaningful pair 4, session 1, L198-203)

1. **S**: A rooster
2. **M**: Is a bird that

3. → **S**: <u>Singing</u>
4. → **M**: *Naaa*
   → **<u>Nooo</u>**
5. **S**: <u>Sings</u>
6. **M**: Sings in the morning.

In 16 out of 20 LREs of this pair, M corrects S's production. It seems that the interaction is more beneficial to S rather than M, and S's ability to produce correct responses in the future may benefit from M's corrections. This procedure continues in session two as well. M is constantly supporting S by correcting her language and providing feedback.

Excerpt 24. Omission of the pronoun (Meaningful pair 4, session 2, L155-159)

1. **S**: *Na* dress which or that I wear I wear <u>it</u>
   No
2. → **M**: I wear, <u>it</u> *dige nemikhad.*
   → **There is no need for 'it'.**
3. **S**: I wear

However, there is a limit to M's knowledge; she can appropriate the activity and correct her peer so far as her linguistic knowledge allows. In the following excerpt, the distinction between *who* and *that* in non-defining RC remains unnoticed. Although S uses the correct form *who*, M modifies the pronoun and provides *that*. S repeats M's utterance without further questioning (turn 7). This suggests that M has not acquired those areas and S seems to be less inclined to question and therefore the problem is solved incorrectly.

Excerpt 25. Choice of defining/non-defining pronouns (Meaningful pair 4, session 1, L148-159)

1. **S**: My father
2. **M**: My father
3. **S**: Works in a police station
4. **M**: My father that is, my father

5. → **S**: Who is
6. → **M**: My father that is police works in police station. *Pedare man ke hast ye police kar mikone*, my father **My father that is a police works**
7. **S**: That is police
8. **M**: That is police
9. **S**: Works in a police station.
10. **M**: Station.

Similarly, the choice of passive verb by S, although correct, is rejected by M in the next excerpt. It is hard to understand why S does not argue her case and insist on her correct form. As a result, S appears to be unable to affect the outcome of the LRE. This is consistent with Malmqvist's (2005) view that sometimes the less talented learners can convince their partners to accept an incorrect decision.

Excerpt 26. Passive or active verb (Meaningful pair 4, session 1, L288-300)

1. M: *Badi,* I have read Hamlet who who writes by Shakespeare.
   Next
2. **S**: *Chera who?*
   Why 'who'?
3. **M**: I have read Hamlet that [writes by Shakespeare
4. → **S**: [writes by Shakespeare, written by
5. → **M**: *Hun*?
   What?
6. → **S**: Written by
7. **M**: Written by
8. **S**: By Shakesp-
9. → **M**: I have read Hamlet that *ke* writes by Shakespeare.
   That

Following Storch' s (2002a) identification of interaction patterns, these two pairs (Meaningful pair 4 and Mechanical pair 6) can be categorised as dominant/passive pairs since one member takes an 'authoritarian' role and seems to appropriate the activity, and the other member seems to take a passive role. It is interesting to note that these two pairs had produced the fewest LREs in the two groups. Furthermore, the time they spent on the activities fell below the average time. Finally, the

dominant members of these pairs (and Meaningful pair 9) scored higher than the passive members in both pre-test and post-test sessions. This result confirms Kowal and Swain's (1994) finding that the weaker learners are either unwilling to take part in the activity (as S in Meaningful pair 4), or are not allowed to contribute to the activity (as S in Meaning pair 9).

8.1.4 Hypothesis testing and request for confirmation

Most of the collaborative pairs hold a lively discussion involving exchanges with questioning, hypothesis testing and attracting feedback. As Swain (1995) has argued, by producing output learners are testing their hypotheses about the target language. In excerpt 27, S questions the correctness of the verb form (turn 6). This is followed by exchanges about the number of the subject and referring back to the preceding words in the sentence.

Excerpt 27. Subject-verb agreement (Mechanical pair 7, session 1, L146-160)

1. **L**: A ambulance is a v- vehicle
2. **S**: Vehicle.
3. **L**: That carry
4. **S**: Patients. That
5. **L**: Carry patients.
6. → **S**: Carry or carries?
7. → **L**: Carries
8. **S**: Carries
9. **L**: *Na dige ye* ambulance in
   No, this is one ambulance
10. **S**: *Areh dige is, is avorde ite dige*↑
    Yes, 'is', since it is 'is', so we use 'it'↑
11. **L**: *Khob*. That carries patients.
    OK
12. **S**: Pa-tient.

In the transcripts of the learners in this study, there are numerous examples of requests for confirmation. In Excerpt 28, E requests confirmation of the response

(turns 6 & 10) by rising intonation and lengthening the vowel sound (*food*) and M offers the correct solution.

Excerpt 28. Subject-verb agreement (Mechanical pair 1, session 1, L17-20)

1. **E**: A chef is someone
2. **M**: A chef is someone who
3. → **E**: Who cook the food↑
4. → **M**: Cooks the food.

Although some of the exercises seem to be simple and straightforward, they provide a variety of opportunities for learners to test their hypotheses about the target feature. In the following excerpt, the learners are testing their hypotheses about the target features *that, who, whom.*

Excerpt 29. Choice of relative pronoun (Mechanical pair 3, session 2, L113-118)

1. **M**: These are Indian friends (.) who (.)who, that
2. **H**: Who spent a lot of time with
3. → **M**: Who
4. → **H**: That with(.)
5. → **M**: Whom, whom we spent a lot of time with
6. → **H**: That, that we spent a lot of time

In Excerpt 30, S is testing her hypothesis about the verb form (turn 1). She verbalises the same form several times until she comes up with the correct form. Meanwhile, Z's feedback assures S that her hypothesis is correct.

Excerpt 30. Verb form (Meaningful pair 9, session 3, L209-213)

1. → **S**: *Ring -e*. It's the best one that I have had, I have ever had, I had ever had, I
   It is 'ring'.
   → have ever had. The best one one
2. → **Z**: I have ever had.
3. **S**: Ever had.

It should be emphasised that hypothesis testing is not always followed by the provision of correct feedback. Sometimes learners provide each other with incorrect feedback, which results in an incorrect resolution of the problem. In the next episode, when M requests confirmation of the sentence containing the redundant pronoun *her*, S confirms it by saying *aha* and repeating the pronoun (turn 4). M simply accepts it with no further questioning.

Excerpt 31. Omission/ retention of pronoun (Mechanical pair 9, session 2, L159-166)

1. **M**: *In hast Rita ke man raftam ba Rita be hendustan*
   This is Rita, who I went with Rita to India.
2. **S**: Haa, I went
3. → **M**: With her *benevisam*↑ *ba un*↑
   Shall I write with 'her'↑ with her↑
4. → **S**: Aha her
5. **M**: To
6. **S**: India

In four out of six LREs targeting this category (i.e. the omission or retention of the relative pronoun), the problems were solved incorrectly by this pair. One might expect that learners who solved their problems incorrectly would go on to provide the same or similar incorrect responses in their post-test. However, in the present study, no direct implication can be drawn, since after completing the activities, the learners received feedback (corrected worksheets) from the researcher at the start of the next session.

8.1.5 Repetition

Repetition of utterances contributes in a number of ways to accurate production of output. One function of repetition by the listener in the present data is that it makes the output *salient* input for the producer. Upon receiving this feedback, the producer notices the mismatch between her language and the target language and then modifies her utterance. In excerpt 32, the repetition of N's output by K (turn 5)

makes it salient for N and she realises that the verb does not correspond to the subject and immediately corrects it.

Excerpt 32. Subject-verb agreement (Meaningful pair1, session1, L295-301)

1 **K**: A spider web is something that

2 **N**: *Ankabut chee mishe?Aha* spider

How do we say spider in English? Aha 'spider'

3 **K**: Spider

4 → **N**: Aha, spider <u>make</u> it → OUTPUT

5 → **K**: A spider <u>make,</u> [<u>make</u>, → INPUT (for N)

6 → **N**: [<u>makes</u>,→ OUTPUT

A similar pattern occurs in the interaction of pair 5 in Excerpt 33. Although F initially produces incorrect verb form (turn 2), she does not recognise the problem in her output until she receives it as input and modifies it (turn 3).

Excerpt 33. Subject-verb agreement (Meaningful pair 5, session 1, L149-152)

1. **T**: A mechanic is someone
2. → **F**: <u>Who fix the car</u> → OUTPUT
3. → **T**: <u>Who fix the car</u> → INPUT (for F)
4. → **F**: <u>Fix-es the car</u>.→ OUTPUT

Another kind of repetition serves as a tool to gain time. In the next excerpt, the learners repeat the phrase *is someone* several times. This allows them to reorganise their thoughts and formulate their next hypotheses. In this way, they can keep track of what they have said before and what they are going to say next. After finding the right word (turns 8 & 9), they reach joint agreement and finish the sentence.

Excerpt 34. Formulating a clause (Meaningful pair 8, session 1, L186-196)

1. → **P:** A robber <u>is someone who</u> or steals
2. → **K**:A robber <u>is someone who</u> steals
3. → **P**: Someone
4. **K**: Who steals
5. → **P**: A robber <u>is someone who</u>

6. → **K**: Is someone who
7. → **P**: Who, is someone, is someone
8. → **K**: Is someone [who steals
9. **P**: [who steals people 's property,
10. **K**: Money.
11. **P**: Money.

A third kind of repetition, uttered with level intonation, signals understanding and confirmation of the peer's utterance. The following example shows how M expresses her confirmation of H's production by verbatim repetition of her utterances (turns 3, 5 & 7). This type of repetition assures H that her utterance is correct and there is no need for further consideration of the response.

Excerpt 35. Formulating a clause (Mechanical pair 3, session1, L227-233)

1. **M**: A teapot is something
2. **H**: That you make tea in
3. → **M**: That you make tea in. Guitar
4. **H**: Guitar is something
5. → **M**: A guitar is something
6. **H**: That you play music with
7. → **M**: You play music with.

Repetition is also used as a comprehension check in the exchanges between learners (Foster and Ohta, 2005). This type of repetition is characterised by one learner's repetition of her peer's preceding utterance with rising intonation and vowel lengthening. The following excerpt, illustrates this feature.

Extract 36. Omission of pronoun (Mechanical pair 6, session 2, L192-199)

1. → **R**: *Areh*. This is (.) an elephant that (.) children loved.
   Yes.
2. → **A**: Loved↑
3. **R**: Loved.
4. **A**: *Ahan paeeniye?* Loved it?
   Is it the one below?

5. **R**: *Na dige uno nemikhad.*
No, that is not needed.

The last kind of repetition occurs when learners practise similar exercises that require the application of the same rule in several occasions. Repetition of output in this sense may serve to produce L2 features more accurately on successive occasions and may promote fluency of production (Lynch and Maclean, 2001). In Excerpt 37, when M encounters an item exemplifying the rule she worked on previous items, she recognises that she should not use the redundant pronoun (turn 4).

Excerpt 37. Omission of pronoun (Mechanical pair 8, session 2, L118-122)

1. **Z:** These are Indian friends
2. **M:** I- Indian friends who
3. **Z:** Who we spent a lot of time with.
4. → **M:** Time wi- aha with.
5. **Z:** We spent.

The same rule is encountered in the subsequent item and M expresses her agreement on the correctness of the response.

Excerpt 38. Omission of pronoun (Mechanical pair 8, session 2, L149-153)

1. **Z:** This is an elephant, elephant which [children
2. **M:** [children
3. **Z:** Loved this. Loved.
4. →**M:** Loved. *Areh* loved.
Yes.

So repetition of utterances creates opportunities for learners to reflect on their own language functioning as input, to monitor its accuracy, to gain time to organise their thoughts, to assess and confirm each other's responses, and to practise linguistic features.

8.1.6 Overlap

Overlaps generally indicate joint production and *intersubjectivity*. According to Wertsch (1985), *intersubjectivity* is achieved 'when individuals working in collaboration define the objects (both concrete and abstract), events, and goals of a task in the same way' (cited in Anton and DiCamilla, 1999: 236). In the present data, an overlap occurs when two learners simultaneously verbalise the same utterance as their response. This suggests that they are formulating and proposing a hypothesis that they have complete agreement on. In excerpt 39, the two learners articulate the same response at the same time producing an overlap. L becomes uncertain about the accuracy of her production and stops articulating the rest of the sentence after *sharpener* (turn 3). This is followed by S's rewording her response (turn 4) and adding *you* to her utterance. Perhaps S realises that something is wrong with her utterance and that L is not accompanying her for that reason. In the next move, L agrees with S's production by saying *yes* and producing the correct response. Then, their next response constitutes another overlap (turns 6&7).

Excerpt 39. Omission/retention of pronoun (Mechanical pair 7, session 1, L299-306)

1. **L**: [A chair is something that you sit on.
2. **S**: [A chair is something that you sit on.
3. → **L**: A shar- [sharpener
4. → **S**: [sharpener is something that sharpen pencil with. That you sharpen
5. **L**: *Areh* is something that you sharpen pencils with.
   Yes.
6. → **S**: [A teapot is something that you make tea in.
7. → **L**: [A teapot is something that you make tea in. A guitar is something that you play.

Similarly, Mechanical pair 2 produces a lot of overlap in their productions, as in the example below.

Excerpt 40. Formulating clauses (Mechanical pair 3, session 1, L219-224)

1. → **M**: A chair is [something
2. → **H**: [something that [you sit on

3. → **M**: [you sit on.
4. → **H**: A sharpener,[a sharpener is something that
5. → **M**: [a sharpener is something that
6. **H**: You sharpen
7. **M**: You sharpen your pencils.

It is interesting to note that the number of overlaps in the two dominant/passive pairs' interaction (*i.e.* Mechanical pair 6 and Meaningful pair 4) was much lower than that in the other pairs. This may imply that the learners with high amount of overlaps in their interactions might be well-matched in terms of collaboration.

8.1.7 Use of L1

According to Swain and Lapkin (2000), learners' L1 is an important cognitive tool which can assist them in moving the task along, in focusing their attention and in their interpersonal relationship. In the present study, use of L1 contributed to the production of output in a number of ways. Firstly, learners used it to manage the task and move it along. Almost all pairs made the most use of L1 in their third activity, which was more complicated than the other activities. In the *text development* activity, learners used Farsi to locate the information and connect it to the text.

Excerpt 41. Moving the task along (Mechanical pair 4, session 3, L12-21)

1. **M**: *Sadeye. (...) che juriye*?
   → **It is simple, (...) how is it?**
2. **S**: *ee gofte ke, man, chee? Yani in soaliye, masalan ba tavajjoh be inha bayad*
   → **She says that, I, what? So this is interrogative, for example, considering these** *inharo kamel konim*↑
   → **sentences we have to complete them**↑
3. **M**: *Kollan mesle inke ye jomle, masalan, farzan, age in dorost bashe, kollan, in*
   → **In general, for example, if this is correct, this sentence should be here.**
   jomle bayad biyad paeen, montaha, bayad ba ye zamayer mafulee rabt bedim dige.
   → **But, it must be connected with an object pronoun.**

Similarly, in the dictogloss the learners used Farsi to identify the content of the tape and organise their sentences. Another function of L1 was to establish interpersonal relationships. Most of the pairs used Farsi for their off-task conversation, apart from

one pair who made very little use of it in their first and second sessions. They were particularly enthusiastic about using English in all parts of their conversation:

Excerpt 42. Choice of relative pronoun (Mechanical pair 8, session 2, L47-48)

1. **Z:** Mitra, Mitra, who, when we can use 'whom'?
2. → **M:** This is MY question [laugh].

The atmosphere was very friendly and it seemed that they were using this opportunity to practise not only their grammar but also their speaking abilities.

Excerpt 43. Interpersonal relationship (Mechanical pair 8, session 2, L 73-79)

1. **Z:** *Lahje chee mishod can can*
   How do you say accent in English?
2. **M:** Accent.
3. → **Z:** Accent. *Accentam khobe?*
   Is my accent ok?
4. **M:** [laughing]
5. **Z:** Excellent.

However, more use of L1 appeared in their third activity when providing a response to an item became their first priority. Therefore, when they wanted to enquire about off-task issues, they shifted to Farsi and lowered their voices.

Excerpt 44. Off-task conversation (Mechanical pair 8, session 3, L339-346)

1. **Z**: *In kheili qashange, Mitra. Dokhti Mitra?*
   This is so nice, Mitra! Did you sew it?
2. **M**: *Areh dadam birun dukhtand.*
   Yes, I had it sewn.
3. **Z**: *Ino bede be man.*
   Give it to me.
4. **M**: *arat goshade.tush gom mishi*[laugh].
   It is too large for you. You'll be lost in it.

Finally, use of L1 helped the learners in composing their responses to the items.

When providing an answer became complicated, almost all the learners switched to Farsi. In this case, they first produced their response in Farsi and then converted it into English. An example is presented below.

Excerpt 45. Formulating clauses (Meaningful pair 6, session 1, L623-632)

1. **R**: A paint brush is the tool *mige.*

   It says

2. → **S**: *Naqqash*

   Painter

3. → **R**: *Ye vasiliyee ke,*

   Is a tool that,

4. → **S**: *Naqqash estefade mikone az un.*

   A painter uses it.

5. → **R**: That *esho bezar* that painter use it↑

   Write 'that'

In this excerpt, the learners first formulate their response in Farsi (turn 2, 3 & 4) and then change it into English (turn 5). When the item is relatively easy, the learners are almost confident to produce it in English. Meanwhile, they monitor the accuracy of their production by translating it to Farsi.

Excerpt 46. Monitoring the correctness of response (Mechanical pair 2, session 1, L509-517)

1. **M**: A chair is something (...)
2. → **B**: A chair is something that you sit↑ on. *Mishinid rush.*

   You sit on.

3. **M**: .....A guitar
4. **B**: Guitar
5. **M**: *Areh.* [writing] is something that↑ you play music with.

   Yes

6. → **B**: *Mituni bahash musiqi benavizi haa*↑

   You play music with it↑

M first produces her response in English and then provides a Farsi translation of what she is trying to say in English.

Excerpt 47. Monitoring the correctness of response (Meaningful pair 2, session 1, L377-384)

1. **M**: A spider web,
2. **Z**: A spider
3. → **M**: *Shabakeye ankabut*, is something which
   Spider web,
4. **Z**: A spider
5. → **M**: Which spider make for ee catch ee in-insect, yes? /indizects/ indects,
   hasharat ro mikhad begire. Insects
   Wants to catch the insects

It seems that the type of activity, difficulty level of the items and learner motivation, to some extent, affect the learners' preference in the use of L1. Nonetheless, further research needs to be carried out to identify the impact of these features on the amount of the L1 use.

8.1.8 Private speech

The transcripts reveal numerous instances of what Lantolf (2000) terms 'private speech'. It is clear that in some segments of their speech, learners are not addressing each other; instead they are talking to themselves. This is characterised by lower volume, and the use of such expressions as *ok, yes, let me check it*, and *I think it is correct now*. Use of private speech assists learners to retrieve the relevant information from their lexicon.

The following extract contains an example of private speech with three features: lower volume, use of *yes* and conjugation of the verb *give*. After providing a response for the item (turn 3), B says *yes*. It is strange to hear this word since M is not asking a question for which B has to provide an answer. Neither is B confirming M's choice of relative pronoun *that* (turn 2), since it is not followed by the word *that*.

Instead, B repeats her own utterance (*gave me)* after expressing *yes*, which indicates that she is commenting on her own utterance rather than on her peer's. B continues her utterance by conjugating the verb *give* at lower volume (turn 3). Apparently, she is not addressing M, and M is not expecting to provide a response. This private speech occurs by briefly embedding within the overt speech and disappears by reoccurrence of the overt speech (*i.e. their address*). It seems that B is interacting with her own linguistic knowledge to retrieve or *confirm* the retrieval of the word in question.

Excerpt 48. Verb form (Mechanical pair 2, session 2, L265-267)

1. **B:** Indian friends, In-dian friends
2. → **M**: That
3. → **B**: That gave me their addresses. Yes. Gave me, past participle of give gave ad- their add- address.

The greatest use of private speech in the data can be observed in the Meaningful pair 5. In this pair, F uses a great deal of self-directed speech to reflect on her language. Whenever she encounters a difficult part of the activity, she interrupts herself (and her partner) by saying *wait* and then lowers her voice and reads the response very carefully. In the example below, the underlined segments in the learners' exchanges show the low volume of their voices.

Excerpt 49. Relative pronoun (Meaningful pair 5, session 1, L183-194)

1. → **F**: My, *sab kon [*reading input sheet] *bashe begu benevisam.*
   Wait. **OK, say it, I'll write,**
2. **T**: My father is police that works in police station. *Bad bebin inja migoftim* xx
   Then see, here we say,
3. → **F**: *Khob hamin dige, migam emkan dare az ina bashe.* Which which is my
   OK, it is the same, I say it might be one of these.
   father.
4. → **T**: My father *pedaram ke,*
   → **My father who,**
5. → **F**: *Doroste fek konam. Mitunim begim:* my father is a man who works in the

→ **I think it is correct. We can say**

police station. *Pedaram mardiye ke kar mikone. Ya hamin* is a police man.

→ **My father is a man who works. Or this 'is a policeman'.**

Khob.

OK

In the above excerpt, both learners lower their voices and quietly translate aloud the response from English to Farsi (turns 4 & 5). Then, F comments on their production by indicating that *'it is correct'*. This suggests that the learners are using private speech to evaluate their production and monitor its accuracy.

8.1.9 Respect and attention

According to Stone (1993), in a successful collaborative learning pattern, the two learners must have respect for each other's views (cited in Kowal and Swain, 1994). Members of pairs identified as 'collaborative' show a great deal of respect to each other. As illustrated in Excerpts 50 and 51, P and K speak very politely to each other and use formal language throughout their interaction.

Excerpt 50. Moving the task along (Meaningful pair 8, session 3, L5-10)

1. **P**: *Cheezharo benevisim. Esmharo minevesi*?

   We have to write *things*. Are you writing our names?

2. **K**: *Areh.*

   Yes.

3. → **P**: *Baz zahmate neveshtanesh ba shoma bashe.*

   You please, take the trouble of writing.

4. → **K**: *Naa. Bede khodam minevisam.*

   No problem, give me the pen, I'll write.

The second pronoun *you* in Farsi has two equivalents: *to* and *shoma*. The former is informal and the latter is formal and respectful. Instead of addressing with *to*, T uses *shoma* together with a plural verb *goftid* to show her respect for F.

Excerpt 51. Word meaning (Meaningful pair 5, session 1, L430-434)

1. **T:** Which it opens, *qofl chee mishe*?
   How do you say lock in English?
2. **F:** Lock
3. → **T**: It opens *dar, hamun ke shoma goftid.*
   → **It opens door, the same you mentioned.**

Although some pairs engage in collaborative pattern of interaction, in others personality factors sometimes influence the process of collaboration. An over-confident and extrovert member may take a dominant role and the other partner may adopt a passive role for a few minutes. This occurs especially at the start of the sessions, when learners are not fully tuned into discussion. At the start of their third session, it seems that M does not value E's contribution and prefers to work on her own. This is suggested by her reluctant manner to respond to E, who indicates a difficulty in understanding the instructions of the activity (turn 2). M continues her reading while E directly asks for assistance (turn 4). M offers none; consequently, E lowers her volume and reads so quietly that her voice is completely inaudible. This signals E's shift to private speech when no answer is provided, implying that a breakdown in communication can stimulate a learner's tendency to switch to private speech. After a few seconds, E comes up with a new idea, and suggests that they should first read the text and then provide their answers. M again rejects E's offer and insists on providing the response on her own.

Excerpt 52. Not paying attention to the other member (Mechanical pair 1, session 3, L5-20)

1. **M**: *Be nazare man yek mishe chahar.*
   In my opinion, number one fits item four.
2. → **E**: *Man aslan nafahmidam chee gofte*?
   → **I didn't understand what she said.**
3. **M**: 'Hello Hanna. Who is girl, that person live'- [reading from the text]
4. → **E**: *Haa inharo bezarinm inja*?
   Now do we insert these here?
5. **M**: 'I didn't like one or two people'.[reading from the text]

6. **E**: Who is the girl
7. **M**: 'Oh that's Maria she is a new friend'. This for [reading from the text]
8. → **E**: [Reading silently]
9. **M**: x 'is she the same person'↑ (...)[reading from the text]
10. **E**: *Haa nanevisim, avval cheez konim, bekhunim.*
    Hum! We shouldn't write. Let's first do *thing*, first read them.
11. **M**: *Avval ino bendazim.*
    Let me do this first.

After a few seconds, M expresses frustration with the difficulty of the activity. This initiates E's participation.

Excerpt 53. Expressing frustration (Mechanical pair 1, session 3, L59-67)

1. **M**: 'Is she the same person who'
2. **E**: Who
3. **M**: 'That was the first camp',
4. **E**: *In hala in nemishe*?
   Isn't it this one?
5. → **M**: *Cheqad sakhte!*
   How difficult it is!
6. → **E**: 'Is she the same person' (…)

M, perhaps, realises that she cannot work out the problem on her own and thus welcomes E's assistance (turn 4). To justify her choice, E provides a translation of the sentence in Farsi and M expresses her satisfaction with that choice (turn 4).

Excerpt 54. Verb form (Mechanical pair 1, session 3, L79-85)

1. **E**: *Bebin inham fek konam in beshe. Nega.*
   See, I think this one is this, look.
2. **M**: Is she the same person [reading from the text with lowered volume]
3. **E**: *Hamun kesi ke zendegi mikard tu* Belfast.
   Is she the same person who lived in Belfast.
4. → **M**: *Areh dige doroste*. The same person that lives in Belfast. That lives (.) in Belfast.

Yes, of course, it is correct.

Similarly, Meaningful pair 3 seems to encounter a major conflict in making decisions at the beginning of the first session. S reacts aggressively when H rightly suggests that the plural verbs do not correspond to the singular subjects and should be modified. This makes S so angry that she verbally threatens H (turn 8); however, H responds very calmly and tries to convince S (turn 9).

Excerpt 55. Subject–verb agreement (Meaningful pair 3, session 1, L397-420)

1. **H**: Fix the car,
2. **S**: A car, cars.
3. **H**: *Ye garson kasiye ke* who or that who work in a restaurant. Works, works he
   A waiter is someone who
   works. *Inha ro ham hama ro* that pick- he picks up, who
   These verbs all of them
4. **S**: eee↑
5. **H**: *Inaha dige*
   Here.
6. **S**: *Na dige*↑
   No ↑
7. **H**: *Ke* makes.
   Who 'makes'
8. → **S**: *Mizanam tu dahanet haa! Vaqti ke who miyad yani hamun he o she o neveshti*
   I'll punch you on your mouth! When there is 'who', it means 'he' or 'she'.
9. → **H**: *Khob dige chera S nemizari tu jomlat?*
   OK, then, why don't you give an /S/ to the verb?
10. **S**: (...)
11. **H**: *Fix inham benevis*, fix
    Fix, write this one too.
12. **S**: Fixes↑
13. **H**: Fixes, *in ham bede works. Khob.*
    Give an /S/ to this, 'works'.

Eventually, they show a more collaborative pattern of interaction and request information and confirm each other's utterances by saying *ok*. Sometimes, they call each other names, implying that they are close enough to allow each other to do so (turn 3).

Excerpt 56. Choice of relative pronoun (Meaningful pair 3, session 1, L539-550)

1. **H**: *Khob chee? Which bezarim, midunam heivune khanegiye.*
   OK what? Should I use 'which'? I know it is domesticated animal.
2. **S**: *Areh.*
   Yes.
3. → **H**: IQ!
4. **S**: *Areh areh areh.*
   Yes, yes, yes.
5. **H**: *Migam who vase ensane, vase heivan chee mizarim?*
   I say, '*who*' is used for human, what do we use for animal?
6. **S**: Which which
7. **H**: Which
8. **S**: *Khob.*
   OK.

8.1.10 Humour and laughter

The tape-recorded interactions of the learners contained instances of humour, laughter and playful use of language. According to Bell (2005), an utterance can be considered humorous when its effect is laughter. She further adds that 'if a speaker's turn contained laughter, this was considered as a clue that the speaker intended his or her comment to be interpreted playfully' (*ibid*: 199). Two examples of the humour which the learners used to entertain each other follow:

Excerpt 57. Humour (Mechanical pair 8, session 2, L407-410)

1. **M**: *Kama ham nazshtim.*
   → **We haven't used comma here.**
2. **Z**: *Man goshne budam uno khordam.*
   → **I was hungry so I ate it.**

In the next extract, learners seem to be tired of providing the responses to an exercise, so M suggests leaving the item, and B uses the same language in a humorous way. This playful use of language provides a sort of relief after hard work and refreshes the learners.

Excerpt 58. Humour (Mechanical pair 2, session 3, L223-225)

1. ***M**: Velesh kon.*
   → **Leave it then.**
2. **B**: *Velesh konam ke mire.*
   → **If I leave it, it will go.**

In the present data, the greatest amount of laughter was found in the interactions of Meaningful pair 6. Sixty nine instances of laughter occurred in this pair's interactions. Since the learners frequently commented on the difficulty of the activities, laughter may be intended to soften the difficult situation and to reduce the tension they were experiencing. Their discourse is also characterised by a large amount of word play and humorous utterances. Two examples of word play are presented in the following excerpts. In the first example, when S enquires about the word *wash*, R supplies the answer, then S remembers *dish* and R adds *fish* to her collection of rhyming words.

Excerpt 59. Word play (Meaningful pair 6, session 1, L385-392)

1. **S**: *Ke mishure, shoshtan chee mishod*?
   Which washes, how do you say wash in English?
1. → **R**: [Washing, wash *mishe dige*
   It is 'wash'.
2. → **S**: [Dish, dish, dish *mishod zarf.*
   'Dish' means dish.
3. → **R**: [Laugh] *fish ham mishe mahi [laugh] benevis.*
   Fish also means fish. Write.

A similar pattern of word play occurs in another part of their discourse. S again enquires about the word *born*; this is followed by their exchanges on the meaning of

both and *boss*. At the end of this excerpt, R declares that her mind is not working anymore and S uses the humorous expression of *'it is closed'* to show her agreement.

Excerpt 60. Word play (Meaningful pair 6, session 1, L1140-1146)

1. **R**: Born
2. → **S**: *Born, bo* both *mishod raees. [laugh]*
   'Both' means boss.
3. → **R**: *Un boss –e. [laugh] boss mishe raees.man ke dige tatil kardam to ham ke dige tatil.*
   → **That is 'boss', 'boss' means boss. My mind can't work any more, yours too.**
4. **S**: *Man ham kerkerasho keshidam.[laugh]*
   Mine also doesn't work any more. 'It is closed'.

Sometimes S uses ironic language *'we are very knowledgeable'*, and R feels free to tease S by saying *'she is saying a ridiculous sentence in Farsi and then asks me to write it'*. Their interaction is mostly accompanied by laughter. Perhaps due to the frequent occurrence of laughter in their exchanges, it took them the longest to complete their activities within the Meaningful group (123 minutes). It is interesting to note that the result of the post-test revealed the highest gain score for R (30) and a relatively high gain score for S (18). Perhaps their interlanguage system, as Tarone (1999) suggested, benefited from a creative and humorous use of language. However, no direct conclusion can be drawn as this needs further analysis of the data, which is outside the scope of this study.

8.2 Characteristics of the activities

Six sets of practice material were prepared for the present study. These included *substitution*, *transformation*, and *text-development* for the Mechanical group and *picture description, 'let's complain'*, and *dictogloss* for the Meaningful group. Below, some features of these activities are explored and their merits and demerits are discussed.

8.2.1 Substitution

The substitution drill was the most direct way of focusing the learners' attention on the target linguistic forms. Almost all learners in the Mechanical group discussed the choice of the relative pronoun. The data revealed that the highest number of LREs focused on RC was produced in this drill. In addition to that, all RC types (SU, DO and OP) were elicited in this drill. The drill also provided opportunities for learners to discuss the referent of the relative pronouns.

The most difficult part of the drill was the provision of answer to the centre-embedded RCs (items 4, 5, 9, 10 in part A, items 7, 8 and 10 in part B, and items 8 and 9 in part C). On these particular items, the learners mostly preferred right-embedded RCs over their centre-embedded counterparts. Presumably, the right-embedded RCs were easier and more familiar than the centre-embedded ones. As the following example illustrates, the expected response for item 5 is successfully completed (turn 7), however, M suggests using a right-embedded RC (turn 11), which is finally agreed upon and provided on the worksheet.

Extract 61: Centre-embedded or right-embedded RC (Mechanical pair 8, session 1, L391-406)

1. **M:** My sister Anna, ee
2. **Z:** My sister Anna
3. **M:** Who is a, who
4. **Z:** Who
5. **M:** Is
6. **Z:** Who is nurse
7. → **M:** Helps patients.
8. **Z:** Who is nurse,
9. **M:** *Mitunim benevisim* my sister Anna is nurse who helps patients.

We can write

10. **Z:** Who, who *ro hazf konim?*

Do we omit 'who'?

11. → **M:** *Na inja benevisim* my sister Anna is nurse who helps patients.

No let's write it here

12. **Z:** xxx I think is true.
13. **M:** Ok, no problem.

Similar discussions occur among other pairs of learners, suggesting that the structure of centre-embedded RC may be either unfamiliar or difficult to produce. This seems to be in line with the predictions of the *Perceptual Difficulty Hypothesis* (PDH), which proposes that centre-embedded RCs are more difficult than right-embedded ones. However, since this study was not primarily designed to test this hypothesis (PDH), no clear conclusions can be drawn, and further research would be needed to consider it in collaborative production.

Other difficult sections included question-form RC (item 10 in part C), and object human relative pronoun (item 9 in part B). The discussions of these items and the LREs identified in these sections were longer than those for other items. Overall, the substitution drill was successful in giving practice in the target linguistic forms.

The disadvantage of the drill was that the responses were completely controlled and the learners were not free to choose their own language. Moreover, the drill presented low processing demands, and the learners were not challenged to draw on their linguistic resources and discuss various aspects of their production.

8.2.2 Transformation

The transformational drill provided learners with opportunities to apply the same grammatical rules on several occasions. Similar to the substitution drill, it directly engaged learners in practising the target linguistic forms. Another advantage of this drill was that it exposed the learners to the differences between the native and target language. In the following example, the learners commit a pronoun retention error. They first produce the response correctly (turn 7); however, when they want to move onto the next item, they start a discussion of the retention of the pronoun *they*. To check the accuracy of their response, they resort to L1 and produce the translation of the response in Farsi (turns 14 & 15). During this evaluation, they notice that Farsi

equivalent (underlined in the text) contains not only a preposition *be* (meaning 'to') but also a pronoun *heshun* (meaning 'they'). Accordingly, they provide their response with a preposition *to* and the redundant pronoun *they* (*These are Indian friends who I helped to they*).

Excerpt 62. Omission of pronoun (Mechanical pair 2, session 2, L271-295)

1. **B**: These are Indian friends↑
2. **M**: India friends that who whom, whom no, who that India friends
3. **B**: *Whom ham mitunim estefade konim.*
   We can also use 'whom'.
4. **M**: *To gofti inja.*
   You said here
5. **B**: *Vali chun ke qeire ma'mule, umm mitunim who o that estefade konim. That estefade konim.*
   But because it is uncommon, we can use 'who' or 'that'. Let's use 'that'.
6. **M**: India friends *benevis who*
   Write 'who'.
7. → **B**: Who, who I helped.
8. **M**: Hum. Fifteen (.)
9. **B**: I helped to they
10. **M**: I helped.
11. **B**: Just I helped? Not I helped to their, to they?
12. **M**: They
13. **B**: Their,
14. → **M**: I helped *man komak kardam unha*
15. → **B**: I helped *man komak kardam*
    I helped
16. → **M**: *Man komak kardam beheshun.*
    I helped to they [word for word translation]
17. → **B**: *Be una,* to they
    To they

In their next item, when they cannot solve the problem they turn to the input sheet with focused attention and try to find the relevant information. However, after

consulting the input sheet, they still retain the redundant pronoun in their handouts. This may suggest that some learners rely more on their L1 than input in providing their responses. The disadvantage of this drill, similar to the previous one, was that it did not involve learners in a deep and complex processing of language.

8.2.3 Text-development

The nature of this activity encouraged more collaboration between the learners than the other two drills. When providing a response was difficult for the learners, they were more willing to seek and offer assistance, and to cooperate with each other.

The second feature of this activity was that it focused learners' attention on various aspects of their English language. In addition to the relative pronouns, they discussed sentence parts (subject, object and verb), word order, verb tense, word and sentence meanings, parts of speech, plural nouns and so forth.

To solve their problems, learners drew on various knowledge resources. Sometimes they discussed which knowledge source they should rely on to solve the problem. For example, in Excerpt 63, the learners are discussing the tense of the verb *work*.

Excerpt 63. Verb tense (Mechanical pair 7, session 3, L296-330)

1. **L:** But there were some good things, Mum gave me a radio. [Alarm
2. **S:** [Alarm clock
3. **L:** Alarm clock, eeh,
4. **S:** Eeh
5. **L:** e well, that works well,
6. **S:** *Workede ha, bebin, gozashte ast*, gave me a radio?
   It is 'worked', see, it is past tense, 'gave me a radio'.
7. **L:** *Na dige, alan ham mamanam behem ye* [radio *dade*
   No now my Mum has given me a radio
8. **S:** [radio *dade*
   Given me a radio
9. **L:** Radio *dad*
   Gave a radio
10. → **S:** *Ke kar khob mikard.*
    That <u>worked</u> well.
11. → **L:** *Ke kar khoob mikone, tamum nashode ke kar kardanesh↑ ke kheylee khoob kar mikone.*
    That <u>works</u> well, its work has not finished yet↑ that it works quite well.

12. → **S:** *Akhe ina hamash bebin gozashte ast.*
But look here all of them are in the past tense.
13. **L:** *Ke kheylee khoob kar mikard*?
That worked quite well?
14. → **S:** *Kar mikard dige , vagti behem dad khoob kar mikard. Dare dar morede*
Worked quite well, when she gave me it was working well. She is
→ *gozashteash sohbat mikone dige* ↑
talking about the past↑
15. **L:** *Khob bashe,*
Ok, then.
16. **S:** *Khob shayad alan nadare, shayad alan kharab shode* (laughing).
Maybe, she doesn't have it any more, or perhaps it is broken down.
17. → **L:** *Diruz dad*↑ (laughing) *taze tavalodesh budeh. Nakheir mishe* that works.
Yesterday she gave↑ her birthday was recent, no it should be 'that works'
18. **S:** *Man nemidonam. Vali- khob,*
I don't know, but, OK,
19. **L:** It works well.

In this excerpt, S suggests using *worked* instead of *works,* which L has suggested. She justifies her choice by referring to the verbs preceding and following *work* in the text. In her view, the tense of the verbs must correspond to that of the other verbs. However, L, relying on her discourse knowledge, proposes *works* and explains that since the speaker has received the *radio* yesterday, so it still '*works*'.

The analysis of the learners' transcripts revealed that, among the three Mechanical activities, the highest number of meaning-based episodes was produced in this activity. Therefore, it can be suggested that this kind of activity stimulates discussion on various aspects of the language.

8.2.4 Picture-description

The picture description activity involved learners in internal linguistic processing, which was not evident in other activities. The linguistic processes of formulation and articulation of speech are automatic and unconscious in native speakers (Levelt, 1989); however, these processes seem to be consciously carried out by non-native learners at this level of proficiency. The present data support the view that learners are constantly engaged in producing messages and matching the lexical items retrieved from their lexicon with the meaning of the message they want to convey

(Levelt, 1989; Bygate, 2001). The discourse of the learners shows frequent instances of this procedure, an example of which is described below.

Excerpt 64. Considering lexical choices (Meaningful pair 2, session 1, L407-460)

1. **M**: A robber is someone ee
2. **Z**: Eee
3. **M**: Eee
4. **Z**: Who *bevasileye,*

   By,
5. **M**: Who *areh*

   Yes
6. **Z**: *Bevasileye police*

   By police
7. **M**: Who police capture, capture
8. → **Z**: *Dastgir mishe* capture?

   Does 'capture' mean arrest in English?
9. **M**: *Areh.* Capture him

   Yes.
10. **Z**: Who police capture?
11. **M**: *Na, areh, na who na who nemikhad inja. (.)*

    No, yes, no 'who' no, it doesn't need 'who' here.
12. **Z**: That *mizarim.*

    We use 'that'
13. **M**: *Areh that bezar age who bezarim bayad un cheez, majhul bekar bebarim.*

    Yes, use that, if we use 'who', it must be *thing*, we must use passive.

    dastgir shode tavassote police, injuri bayad begim.

    Was arrested by the police. We have to say it in this way.
14. **Z**: That
15. → **M**: That the policeman, the policeman, man *umm dastgir mikone un ra*

    Arrests him
16. → **Z**: *Dastgir mishe* capture?

    Does 'capture' mean arrest in English?
17. → **M**: *Capture[taskhir cardan mishe*

    'Capture' means to surrender
18. **Z**: *[taskhir kardan mishe*

It means to surrender

19. → **M**: ee caught caught cat- caught *dastgir kardan*

To arrest

20. **Z**: *Dastgir kardan bishtar,*

To arrest, mostly,

21. → **M**: Ee /ches/ [she means chase] /ches/ *taqeer kardan bud*? /ches/? (.)

Does /ches/ mean to change?

22. **Z**: /Ches/?

23. **M**: *Ches bud?*

Was it ches?

24. **Z**: I don't know *Velesh kon.*

Leave it.

25. **M**: Ches, *ahan,* catches him

26. **Z**: That the policeman

27. **M**: Catches him,

28. **Z**: Catch

29. →**M**: T *mikhad vasatesh, catches, ese sevvom shakhse ha.* Him. *Uno.*

It needs a /T/ in the middle. 'Catches', it also needs a third person /S/. Him

30. **Z**: Him.

First, the learners read the initial part of the item. After thinking for a few seconds, one of them formulates a sentence (turn 7), but the other learner (Z) enquires about the form of the word *capture* and whether it matches the semantic content of the message *to arrest* they have in mind. M first confirms her choice, and then they discuss the choice of the relative pronoun. After reaching joint agreement on the choice of the relative pronoun (*that* instead of *who),* Z raises the same question again and M realises that the meaning of the word (*capture*) does not exactly match the semantic information in their message (turns 15, 16 & 17). Therefore, she restarts searching for the right word in her lexicon (turn 19). During this process, a number of semantically and phonologically related words such as *cat- caught* and *ches* are activated. These seem to be competing with the target item. To make a sound decision, M requests help (turns 21 & 23) but Z declares her inadequate knowledge in this regard and suggests leaving the item (turn 24). M, however, makes a decision and chooses *catch.* Although it is not the exact word that M was looking for (*arrest*),

it is still the 'best match' for this item and seems to satisfy her (*aha*). Following this, she decides to integrate it into the structure of the sentence, but other linguistic procedures, *i.e.* phonological encoding, still have to be carried out. She first checks the spelling of the word *catch* and reminds Z that a /T/ is needed in the middle of the word (orthographic encoding) and the verb *catch* receives an /S/ since it modifies the singular subject *policeman* (morphological encoding).

Obviously, such linguistic processing can not be externalised in individual production of output, since in a natural setting a learner seldom talks to herself about what to say or what *not* to say. The great advantage of dyadic work of this sort is that learners are constantly required to justify their choices to their peers and that they should reach joint agreement in making decisions. Therefore, they have no other choice than to verbalise their internal linguistic processing and jointly solve the problems encountered during the activities.

8.2.5 'Let's complain'

The second activity of the Meaningful group involved learners in matching the content of the message they wished to convey with its form. During the completion of this activity, learners *noticed the hole* in their linguistic knowledge when they struggled to convert their message into actual words in English. This is evident in their frequent use of a typical sentence (*how do you say x*) while searching for the lexical items. Sometimes they found the situation frustrating when they were searching in vain for the right word to express the message. These frustrations may indicate the exact issue of *noticing the hole* since they occur because of internal feedback by the learners themselves (Swain and Lapkin, 1995).

In Excerpt 65, the learners are considering a number of words in their L1 (*experienced, impatient* and *knowledgeable*); the only lexical item available to them in English is '*very active*', which was proposed by Z but was not accepted by S.

Extract 65. Considering lexical choices (Meaningful pair 9, session 2, L25-52)

1. **S**: My father
2. **Z**: Who is
3. **S**: Who is a teacher
4. **Z**: A teacher
5. **S**: Is (.) *Chee benevisam be nazaret?*
   Do you have any suggestion?
6. **Z**: Very active.
7. → **S**: Is very active. My father (.)
8. **Z**: Who is a teacher
9. **S**: Is
10. **Z**: A, is a
11. **S**: Who is a teacher is
12. → **Z**: *Ya masalan ba tajrobe budan.*
    Or for example, is experienced
13. **S**: *Avvali uno avordim.* Is (.)
    We used it for the previous item.
14. → **Z**: *Ya masalan bi hosele budanesh*
    → **Or for example, is impatient**
15. **S**: *Be hosele chee mishe*? Is
    How do you say 'impatient' in English?
16. → **Z**: *Hamun* active *benevis.*
    Write the same 'active'
17. → **S**: *Active naa* is very *masalan (.)* is very *(.) ba malumat chee mishe?*
    No, not active. 'Is very' for example (.) is very (.) how do you say knowledgeable in English?
    Knowledge, my father who is teacher(.) has many information, has a lot of inte- information
18. **Z**: A lot of
19. **S**: Information.

After further reflection, S finally comes up with a form, *a lot of information*, which seems to match the content of the message she is trying to convey. Excerpt 66 below shows that the two learners are engaged not only in lexical search but also syntactic and morphological ordering of the sentence parts. K is consciously monitoring the

accuracy of their production in terms of the omission of the redundant pronoun *it* and matching the verb tense in the two sides of the sentence (turn 8).

Extract 66. Considering lexical choices, verb tense, omission of the redundant pronoun (Meaningful group 8, session 2, L307-320)

1. **P:** Bus wait for, the bus which I
2. →**K**: That I waited for it that I wait for [that I wait for for it
3. **P**: [that I wait for it, for a long *maslan* time
   For example
4. **K**: Is
5. **P**: Didn't come.
6. **K**: Yes, the bus that I wait
7. **P**: Wait
8. → **K**: For *check mikonam* it *o* [that I wait for
   I am checking 'it'.
9. **P**: [that I wait for didn't come.
10. → **K**: Don't
11. → **P**: Don't come. *Areh, unham chon wait-e.*
    Yes, because the verb is 'wait'.

Therefore, it appears that the activity is successful in drawing learners' attention to lexical and syntactic features of English. Moreover, the learners showed the most cooperative pattern in this activity, when they were collaboratively formulating their sentences, each one adding a bit of information to the response.

8.2.6 Dictogloss

The dictogloss directed the learners' attention to the content of the message. It promoted negotiation on the content and form of the message they were trying to reconstruct. The majority of the learners reconstructed the content in Farsi, then, after reaching agreement on the content, they started reconstruction in English. They often

discussed the identification of the words mentioned in the tape. The following excerpt shows how learners reconstruct the content of the text in Farsi.

Excerpt 67. Reconstructing content of the text (Meaningful pair 9, session 3, L53-65)

1. **S**: *Ba'd,ee karti ke baraye kesi ferestade budeh* ,
→ **Then, she sent a card to somebody,**
2. **Z**: *Nareside budeh be dustes*h.
→ **It hadn't arrived to her friend**
3. **S**: *Nareside budeh, fahmideh ke evening fahmide ke un karte nareside.*
→ **It hadn't arrived. She found out in the evening, she found out that the**
Ba'd mesle inke ye clock gerefte
→ **card hadn't arrived. Then it seemed to me that she got a 'clock'.**
4. **Z**: Uhm, clock
5. **S**: *Ye clock gerefte,* ba'd
→ **She got a 'clock'. Then**

The learners used their own vocabulary to develop most parts of the text. For example, they used *was* and *repair* instead of *went* and *fix*, respectively. Considering the structure of the sentences, approximately half of their reconstructed sentences were either simple or compound. The following sentences are extracted from the learners' worksheets.

a. The computer was wreak (pair 3)
b. My mother gave me a present. it was a radio, it was very nice (pair 3)
c. I invited my friends *but* they didn't come (pair 3)
d. CD shelves which fell down immediately (pair 5)
e. The man couldn't fix it (pair 8)
f. In the CD shop fell down. (pair 8)
g. My computer was down and (pair 9)
h. The man couldn't repair it (pair 9)
i. I went CD shop it was fell down (pair 9)

These sentences, to some extent, reflect the problematic areas of RC production after listening to a tape. In sentences (a), (d), (e), (f), (g), (h), the centre-embedded clauses modifying the subject (underlined) are missing from the middle of the sentence. Apparently, all the learners in the nine pairs did not catch these parts of the tape (i.e. *that Uncle Bill gave me*, *which my dad put up* and *who came to mend it*). In sentence (b), the learners have separated right-embedded RCs in the sentence-final position and produced another simple sentence using a comma and *it*. Finally, in sentence (c), the learners have understood the original sentence (*The friends I invited didn't come*) but have changed the structure from complex to compound.

In the next stage of analysis, all the sentences containing an RC or pronoun were extracted from the learners' worksheets. The original text contained seven centre-embedded and four right-embedded RCs. Surprisingly, given the number of RCs seeded in the text (n=11) and anticipating that at least four instances of RCs would occur per reconstructed text, a total of thirteen sentences containing RCs or pronouns were produced by the nine pairs of learners. Three (3) out of thirteen (13) sentences were grammatically incorrect. The problem with these three sentences was the *resumption of the pronoun*, which is considered ungrammatical in Standard English. The learners also produced more right-embedded clauses (8 out of 13) than centre-embedded ones. The total number of RC sentences produced in this activity is presented below. These sentences are direct quotations from the reconstructed texts produced by the nine pairs of learners.

1) Thank you very much for your golden rings <u>which are really beautiful</u> (pair 1)
2) The man <u>who take a food from restaurant</u> was not good manner (pair 4)
4) In the afternoon, dad show me a man <u>who was fortune teller</u> (pair 5)
5) Thank you for your gold ring it was the best present <u>I have ever had</u> (pair 5)
6) *In the evening the woman <u>that who was famous actress</u> (pair 6)
7) *I went to my mum's restaurant <u>that it's very awful</u> (pair 7)
8) In the evening the invitation <u>that I sent for my friends</u> haven't arrived (pair 8)
9) Thanks for gold earring, it was the best present <u>that I gave</u> (pair 8)
10) The restaurant's food <u>that I offered</u> was terrible. (pair 8)
11) *The restaurant <u>I took it</u> was terrible (pair 9)

12) Evening I found one of my friends I was waiting (pair 9)

13) Thank you for the gold ring. It's the best one I have ever had. (pair 9)

The sentences show that although in some examples (6 and 9) the relativised noun serves as a SU (the easiest RC based on the predictions of the NPAH), the learners are unable to produce it. This reminds us that there might be other non-NPAH explanations for this and that, in addition to the difficulty involved in the processing of various RC types, the position of RCs within the sentence may also present processing problems for the learners. As Comrie (2007: 306) has pointed out 'language, in both structure and performance, is an interaction of various principles, and when these principles pull in different directions, one principle might well have to yield'. Izumi (2007) also argues that the interruption caused by the centre-embedding of an RC in the main clause might interfere more in comprehension than the word order differences caused by various RC types. While the latter can be resolved more locally, the former 'requires the integration of the entire sentence and is thus more costly for working memory' (*ibid*: 355)

Apart from the function and position of RCs, the nature of the activity influenced the production of learners. Dictogloss is not purely a production task; it is partly comprehension and partly production. Therefore, if learners have problems in comprehending L2, then it will be difficult for them to produce it. Normally, L2 learners need input to work on; due to problems in understanding of morphological, lexical and syntactic details of the text they produced very limited input, i.e. their notes, which to some extent contributed to the little production of language in this activity

Overall, the activity engaged learners in the discussion on what the text contained and how to convey the gist of the information in the target language. It also pushed them to *notice the holes* and *gaps* in their production as well as their comprehension.

8.3 Summary

This chapter focused on what learners actually did during the completion of the activities. To examine the impact of output and collaborative dialogue on learning, the learners were considered in terms of their involvement in collaboration, hypothesis testing, correction and a number of other features of collaborative output. The sample extracts from the learners' interaction revealed some features of collaborative work. These features are summarised below:

- Learners employ grammatical rules and terminology whenever needed. The presentation of rules is based on a sound knowledge of the target language. Provision of feedback based on incorrect rule explanation does not contribute to L2 learning.
- Corrections are carried out by both partners, and learners attend to the erroneous features of their own language. They are neither over-confident about their responses nor over-cautious in testing their hypotheses and making mistakes. They request justification for the correction to their language.
- Both learners are engaged in collaboration and knowledge building. They seek and offer assistance for solving their problems.
- Learners respect each other and value any contribution from their peer. They do not disregard each other's requests.
- Learners refer to their L1 whenever providing the response becomes difficult. Being able to interact in L1 helps them maintain personal relationship and manage the task. Use of L1 also assists learners in formulating their language and monitoring their production.
- Learners use repetition to gain time to organise their thoughts, confirm each other's language, request confirmation and practise new language forms.
- Learners switch to private speech whenever they want to monitor the accuracy of their production. Use of private speech is also observed when the activity becomes difficult and when there is a breakdown in communication between the learners.

- In the case of complete agreement on the response, learners produce their utterances at the same time, which constitutes an overlap. Overlaps are more evident in well-matched pairs than other pairs.

The findings also suggest that the more structured and controlled drills such as substitution generated more attention to RC structure than the less controlled activities such as dictogloss. The findings also indicate that the less structured activities directed learners' attention to the content of their message, choice of the lexical items and syntactic features of their production.

As the learners moved towards the end of the series of sessions, they showed more collaborative pattern of interaction. This was partly due to the nature of the activities, since the more demanding activities required more collaboration.

CHAPTER 9

Discussion and conclusion

The present study was designed to investigate the effect of output activities on the learning of English relative clauses (RCs). The study was guided by the following three general questions:

- 1 (a) Do learners working collaboratively on more Meaningful output activities involving English RCs make more progress in that area than learners working collaboratively on more Mechanical output activities?
- 2 (a) Do learners working collaboratively on more Meaningful output activities produce more LREs than learners working collaboratively on more Mechanical output activities?
- 3) Is there any relationship between the acquisition of English relative clauses and the learners' discussion during the completion of the activities?

It was hypothesised that the Meaningful output activities would have a greater effect on the learning of English RCs than the Mechanical output activities. Contrary to our expectations, the findings from the test scores indicated that the learners in both groups made similar gains after completing the activities. With respect to the second general question, it was hypothesised that since the Meaningful activities might engage learners in more form-meaning discussions, they might produce more LREs. Data from the learners' transcripts revealed that the Meaningful output activities did indeed generate more LREs than the Mechanical output activities. Furthermore, they promoted attention to the form-meaning relationship by engaging learners in processing the meaning of sentences more frequently than did the latter activities. Finally, it was hypothesised that there would be a significant relationship between the learners' gain scores and the number of LREs produced during the completion of the activities. The comparison of the data from the test scores and the number of LREs in the two output groups did not support the hypothesis. However, a further regrouping of the participants as high and low scorers and the comparison of these

two group's gain scores to the number of the LREs produced by pair members revealed a positive correlation between the gain scores of the low scorers and the number of LREs they produced.

9.1 Research question 1: Meaningful and Mechanical output

Findings from the analysis of test scores indicated that both Mechanical and Meaningful groups made progress in their knowledge of relativisation. The learners' scores improved significantly from pre-test to post-test ($p<.05$). However, the comparison of the post-test scores of the two groups showed no significant difference in progress. Although the Meaningful group made slightly more progress than the Mechanical group, the difference did not reach statistical significance. Therefore, our hypothesis 1 (a), which predicted that the *Meaningful* output activities would have a greater effect on learning English RCs than the *Mechanical* output activities, is not supported. It can be concluded that the two activity types were similar in their benefits for the learning of the target linguistic forms (i.e., English relative clauses) as measured through the translation and sentence combination tests.

This result can be explained in the following way. The design of this study involved collaborative or dyadic production of output, and therefore two language processing systems with two monitoring mechanisms. The monitoring mechanism of one learner may simply allow meaningless or mechanistic production of the target form while the peer's may not. We observed that what one learner produced became input for the other learner, which was immediately monitored in terms of accuracy. The feedback provided, or the clarification request made, by the peer may have required the learner to avoid the rote and mechanical production of the structures. The conflicts arising between the two learners may further stimulate discussions, which could equally entail deeper linguistic processing, as may happen in a meaningful context. To put it in another way, although the Mechanical activities, by themselves, may not require the processing of language in a meaningful way, the interaction between the learners may have induced such processing and generated meaningful learning opportunities. It follows that the interaction might have obscured the effect

of the Mechanical output. Thus, in addition to the two variables of the study, *i.e.* the Mechanical and Meaningful output activities, there was a crucial intervening factor, *i.e.* the peer, who was actively involved and equally responsible for the outcome of the production in the activity.

It can be concluded that some of the traditional mechanical drills, although only slightly meaningful, may be interactionally successful in stimulating learning opportunities on a grammatical form, the outcome of which is maintained, at least, over a short time period (i.e., eight weeks). The findings confirm Donato's (2004: 295) view that the 'activity is dynamic and not imposed externally on participants' in collaborative work. The collaboration and joint production during an activity may create opportunities for learners, whereby they may provide each other with '*scaffolded*' help and relevant feedback within their '*Zone of Proximal Development*'. Therefore, it can be speculated that the feedback provided by the peer might have neutralised the effects of the main variable, i.e. output activity type and influenced the outcome of the study.

Nevertheless, the results of the tests are limited in two ways. Firstly, the three tests administered in the pre-test and post-test sessions targeted a grammatical form (i.e., English relative clauses), whereas the learners, particularly in the Meaningful group, discussed linguistic features other than English relative clauses. If the tests focused on meaning-based features of the language, then it could be possible to know whether or not the Meaningful group made more progress than the Mechanical group in other linguistic features. Secondly, although both groups produced and discussed the structure of English relative clauses, the learners in the Meaningful group seemed to employ a deeper level of cognitive processing, i.e., they wanted to express an intended meaning or complain about a person or an object. Such a desire to produce the target forms was not present in the Mechanical drills. If a delayed post-test was administered some time later, then it could be possible to find out which group had retained the improvement they exhibited in the first post-test.

9.1.1 Further findings from the analysis of test scores

In the present study, the learners in both groups scored high in the test of *translation from English to Farsi.* A comparison of the learners' scores on this test with those obtained from the other two tests (*translation from Farsi to English* and *sentence combination)* showed significant differences between them. While the learners scored similarly in the two production tests, they scored very high in the comprehension test, both in pre- and in post-test sessions.

This result can be explained in two ways. One explanation could be that since English provides many explicit clues for the learners in this structure, the comprehension of RCs for Farsi learners may be less difficult than their production in English. In fact, this very point has been made by Comrie (2007) in explaining the relative difficulty of English learners in comprehending Japanese RCs, where such explicit clues do not exist. A similar comparison can be made between Farsi and English RCs. Among these explicit clues, as we read in Chapter 4, are the relative pronouns in English, which have several variants (*i.e. that, who, which, whose, whom*) compared to those in Farsi, which take only one form (*i.e., ke*). Therefore, it might have been easier for the learners to comprehend several forms in English and produce one form in Farsi than to comprehend one form in Farsi and produce several forms in English.

A second explanation for the learners' superior performance in the test of comprehension may be that, similar to the Canadian immersion students investigated by Swain, among others, these learners' production of English RCs lags behind their comprehension. In other words, they seem to be proficient in comprehending the target linguistic forms in English, but their production appears to be less developed at this level. The reason that can be given for this contrast may be the learner's current educational learning context in Iran, which emphasises reading skills more than writing and speaking in the target language.

In addition to the differences in the scores obtained for the two sets of tests (production and comprehension), the learners' scores on each type of RC in the comprehension test differed from those in the two production tests. The order of difficulty obtained in the *sentence combination* and *translation from Farsi to English* supported the predictions of the NPAH hierarchy (SU>DO>OP>GE). That is, learners obtained the highest mean score in SU, followed by DO, and OP. The lowest mean score was obtained for GE relatives. The test of *translation from English to Farsi*, however, showed a different order of difficulty, in which the participants obtained the highest scores for OP (OP>SU>DO>GE). It is interesting to note that Izumi (2003) obtained a similar order of difficulty, with OP and DO being reversed in his *interpretation test* (SU>OP>DO). The interpretation test in his study was designed to assess L2 learners' comprehension of English RCs. By comparing the findings of this study with those of Izumi (2003), it may be tentatively concluded that the processing of RC types in production and comprehension may follow different orders.

Nonetheless, all these studies and many others (e.g., Eckman *et al.*, 1988; Izumi, 2003b) are open to a major criticism, put forth by Eckman (2007). He argues that the predictions of the NPAH can not be tested against grouped data. Instead, it must be assessed with individual interlanguages. Considering this argument, the data (overall pre-test and post-test scores) were used to draw two implicational scales. It was found that at the 60% accuracy criterion level, the data produced a high coefficient of *scalability* ($C_{\text{pre-test:}} = .912$ and $C_{\text{post-test}} = .948$), indicating that the data were definitely ordered in agreement with the NPAH, giving support to the research hypothesis 1(b).

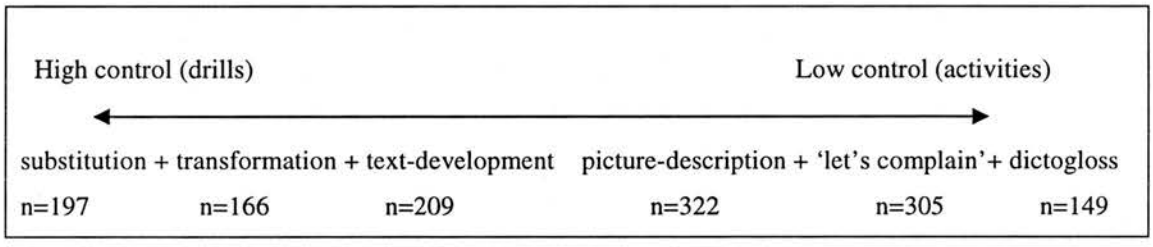
9.2 LREs in the Mechanical and Meaningful output activities

The research questions 2(a) asked whether the Meaningful output activities would yield more LREs than the Mechanical output activities. A general finding from the pair interaction was that learners discussed a wide range of L2 features, including those that were not targeted in the present study. The Meaningful activities generated 58% and the Mechanical activities produced 42% of the total episodes (n=1348).

With respect to the main question, the two output groups differed in their mean number of total LREs ($p<.05$), giving support to our hypothesis 2 (a), which predicted that the Meaningful activities would generate more LREs (metatalk, hypothesis testing and noticing) than the Mechanical activities.

With respect to the frequency of LREs in each activity, the analysis showed that the activities differed in the number of episodes they produced, with the highest number produced in the *picture description* (n=322) and the lowest number in the *dictogloss* (n=149). This may indicate that the dictogloss may be working a bit differently in drawing the learners' attention to linguistic features. A close comparison of the number of LREs produced by 9 dyads in this activity (n=149) to the number of LREs produced in other studies investigating the dictogloss suggests that the activity was relatively successful in encouraging learners to focus on form and discuss the meaning of the text. We can compare this with the findings of Leeser (2004), in which the total number of LREs produced by 21 dyads was 138, and Kowal and Swain (1994), in which the total number of LREs produced by 19 dyads was 224. Therefore, although the number of dyads participating in the present study was less than that in the previous studies, the number of LREs they produced fell somewhere between the numbers of LREs produced in the mentioned studies.

A further examination of the frequency of LREs in each activity, considering their position in the continuum, shows that the activities at the middle of the continuum generated a large proportion of LREs. Within the Meaningful group, six pairs produced most of their LREs in the picture description, followed by the 'let's complain' and dictogloss:



Within the Mechanical group, five pairs produced the highest number of LREs in the text-development followed by the substitution and transformation. This shows that the frequency order of the total LREs in each activity corresponds to that obtained for the majority of the pairs.

9.2.1 Focus of LREs in the Meaningful and Mechanical output activities

The research question 2(b) addressed the focus of LREs in the output activities. The comparison of the mean number of grammatical and meaning-based episodes revealed that the two groups significantly differed in their focus of attention. The Meaningful output activities generated more meaning-based LREs ($p<.001$), and the Mechanical output activities produced more grammatical LREs ($p<.05$). This finding lends support to our hypothesis 2 (b). While the Mechanical group talked about grammar in 77% and meaning (and lexis) in 14% of their episodes, the Meaningful group discussed grammar in 42% and meaning in 46% of their episodes. These findings also suggest that, unlike the Meaningful activities, which involved a balanced focus of attention on grammar and meaning (except in the dictogloss), the Mechanical activities were predominantly focused on grammar.

Detailed analysis of the types of LREs in each activity showed that while in the substitution drill, the grammatical episodes (n=152) took place more frequently than the meaning-based episodes (n=24), in the dictogloss, the meaning-based episodes (n= 67) were produced more frequently than the grammatical episodes (n=22). This is consistent with the aims of the material developed for the present study. The design of the research material anticipated that the activities at the less controlled end of the continuum would allow for more meaningful processing of the language. However, this meaningful processing rarely involved the target linguistic forms (RC). We observed that out of 149 LREs in the dictogloss, only 3 LREs were focused on the RC structure. This apparently gives support to many SLA researchers' argument (e.g., Slimani, 1992; Swain, 2000) that 'learners appear to have their own agendas for which aspects of the language they decide to focus on at any given time.

The agenda does not necessarily coincide with the intent of the instructor.' (Lantolf and Thorne, 2007:206)

The comparison of the overall number of the grammatical and meaning-based episodes produced in the two sets of activities showed that the Meaningful activities not only generated a large number of grammatical episodes (n=325), but also frequently produced meaning-based episodes (n=358), which were strikingly higher than those produced by the Mechanical activities (n=81). Thus, the finding from the process data, which indicates a significant difference in the two groups' attention to meaning, does not conform to that from the product data, which suggests similar progress for the two groups of learners. One speculation may be that since the grammatical episodes followed a very similar pattern in the two groups' interactions, and since the tests targeted a grammatical feature, the learners' progress in the two groups was similar from the pre-test to the post-test. In fact, the limited focus of the tests may have obscured the actual progress made by the learners in other linguistic areas. If the tests had focused on the meaning and lexis, too, then it could have been possible to investigate how the two groups had progressed on those areas and whether the Meaningful group, who discussed more meaning, had made more progress than the Mechanical group.

9.2.2 Further findings from LRE analysis

The research questions 2(c), 2(d) and 2(e) addressed other features of LREs, i.e. value, nature and outcome. Findings from the comparison of the mean number of these features revealed significant differences between the two groups in the *continuous* and *correctly solved e*pisodes; however, no significant difference was found in the mean number of *weighty* episodes. This finding does not lend support to our hypothesis 2(c). One speculation is that there might be a relationship between the number of weighty episodes and the number of grammatical episodes. Since the learners had a wide range of metalinguistic knowledge at their disposal (e.g., grammatical rules and terminology), they were more likely to extend their discussions and give further explanations when focusing on grammar than on

meaning. A correlational analysis confirmed this speculation and showed a positive correlation between the grammatical and weighty episodes. This means that as the number of grammatical episodes increased, so did the number of weighty episodes. This is, to some extent, normal since it is unlikely that two learners extend their discussions and provide rules and explanations when their talk is focused on the choice of a vocabulary item.

Another finding, which gives support to hypothesis 2(d), was that the Meaningful group produced more continuous episodes than did the Mechanical group. This means that when learners focused on a particular linguistic feature, they did not leave the point until they solved it. One explanation could be that the Meaningful output activities involved focused attention due to their challenging nature and required learners to solve the problem all at once, otherwise their scattered attention, which might be associated with the discontinuity of the episodes, would not allow them to solve the problem correctly.

As regards the outcome of LREs, the majority of episodes in both groups were resolved correctly on most occasions. That is, when learners encountered a linguistic problem during their discussions, they solved it correctly. The *incorrectly solved* and *unresolved* episodes less frequently occurred in both groups' episodes. This result is consistent with the findings of previous studies (Leeser, 2004; Malmqvist, 2005; Storch, 2007). The comparison of the outcome of episodes across the two output groups showed that although both groups solved most of their problems correctly, the Meaningful group solved more LREs correctly than did the Mechanical group. This result lends support to our hypothesis 2(e).

An important point should be made here with respect to the comparison of LRE features through multiple t-test analyses. It is believed that there is a danger in running multiple t-tests on the same set of data. To answer questions (2a — 2e), I carried out thirteen multiple comparisons on the same set of data, which may give rise to type I error (false positive). That is, I may have wrongly calculated that the two groups have statistical difference in some LRE features. As mentioned before,

one way of avoiding type I error is to adjust the significance level, for example, through Bonferroni approximation. Nonetheless, adjusting the level of significance through this method (i.e. Bonferroni) would be too conservative and it may lead to underclaiming the number of significances that may truly exist between the two groups. Note that with Bonferroni adjustment and setting the significance level at the .003, there would be only one significant difference between the two groups, i.e. in the meaning-based episodes. Therefore, I did not apply this method for my data. Instead, I compared the frequencies of LRE features between the two groups through five separate Chi-square tests, the result of which was consistent with the t-test analyses carried out in the present study. To confirm these findings, I suggest that future studies address all these features across the Mechanical and Meaningful output groups.

Comparison of the activities in terms of *noticing* the gap in the feedback session revealed that the Meaningful group noticed significantly more gaps than did the Mechanical group ($p<.05$). The highest amount of noticing occurred in the dictogloss ($n=64$), although it generated the fewest LREs ($n=149$). One possible explanation for this may be that while in the dictogloss feedback was provided immediately after the completion of the activity, in all other activities, feedback in the form of corrected worksheets was provided after two weeks. The adjacency of feedback to the recent production and discussion of the learners may have attracted their attention to the deviant forms in their language. Furthermore, the written input, *i.e.* the original text read on the tape, which was not provided at the start of the session, might have provided learners with more opportunities to reflect on their language and notice the gaps in their production.

9.2.3 LREs, time on task and the learning of relative clauses

A comparison of the number of LREs and the time spent on the activities by each pair of learners in the Meaningful group showed a significant correlation. That is, the more time spent on the activities, the more LREs were produced by the pairs. This

result gives further support to Swain and Lapkin's (1998) finding that there is a positive correlation between time on task and the number of LREs.
However, what is particularly important in LRE analysis is to establish a relationship between LREs and the learning of the target linguistic forms. That is, do learners progress more if they produce more LREs? To find an answer to our third research question, another correlational analysis was carried out to establish a link between LRE and the learning of the target linguistic forms as measured through combined gain scores for the pairs. The analysis, however, showed no significant correlation between the number of LREs and the progress made by the pairs of learners. Again this result might have been affected by the focus of the tests becuase the tests targeted only English relative clauses and other linguistic features discussed during interactions were not examined through the tests.

In the next attempt, the participants of the study, regardless of their initial assignment to the Mechanical and Meaningful groups, were regrouped into high scorers (i.e. those who scored above the mean in the pre-test) and low scorers (i.e. those who scored below the mean in the pre-test). Although the learners were at the same overall proficiency level, they differed with respect to their ability in relativisation. Next, each learner's gain score was compared to the number of LREs jointly produced in her dyad. The result of this comparison revealed a significant positive correlation between the number of LREs and the gain scores of the low scorers. This means that the more LREs they produced during interaction, the more progress they made in their post-tests. The number of LREs, however, did not correlate with the gains of the high scorers.

This may suggest that the low scorers were provided with opportunities for learning by, for example, practising the target linguistic forms on successive discussions, hypothesis testing and being corrected by their peers, whereas these repeated discussions did not correlate with the high scorers' progress in learning. It can be tentatively concluded that LREs are related to second language learning in a particular way, that is, learners at lower proficiency levels progress more if they produce more LREs.

It should be noted that although the high and low scorers were equally distributed in each of the output groups, the type of pairing, i.e., high-high, low-low and high-low, may have influenced the number of LREs they produced. For example, a pairing of high-high scorer may produce more LREs than a pairing of low-low scorer. This is a complex issue which may give rise to further variations in the number of LREs produced by each pair of learners. Therefore, further research on this issue needs to be carried out in future studies.

9.3 Findings from the pair interaction

The present study revealed some major features of collaborative output, which may have contributed to the generation of learning opportunities. Among these features were numerous instances of collaborative completion of utterances. The learners jointly completed not only the form of the language but also the meaning they were intending to express in the target language. However, not all pairs demonstrated the same level of collaboration and joint problem-solving, particularly in their earlier sessions. In some of the pairs, the activities were mostly completed by one learner, while her partner was hardly allowed to contribute to the activity.

Self- and other-corrections took three forms in the learners' interactions: a) the learners mutually corrected each other's language and readily offered and accepted the corrections; b) one learner corrected the other learner but she (the corrector) made either very few mistakes or self-corrected herself immediately after producing an erroneous structure and c) one learner corrected the other learner but her own errors remained unnoticed. The more collaborative pairs exhibited mutual correction (the first pattern), which seems to benefit both learners.

Hypothesis testing was frequently observed in the learners' productions when they produced linguistic forms or reflected on one form out of several possible choices. The learners also received immediate feedback from their peers, although, this was not always correct. This may remind us of the need for the provision of feedback by

a more knowledgeable person, for example the instructors, after the completion of an activity in the collaborative setting.

Repetition of utterances contributed to the accurate production of language. Overall, repetition a) made the output salient and the problem noticeable for the producer, b) served as a tool to gain time, c) informed the learner of the correctness of her utterance when her peer used verbatim repetition, d) was used as a request for clarification with rising intonation or confirmation of the peer's production with level intonation and e) provided practice in the application of the same rule on successive occasions.

Numerous instances of *overlap* were observed in the learners' interactions. Overlaps generally indicated joint production and agreement of both learners over the response. When one learner encountered uncertainty, she immediately stopped articulating the response which would, otherwise, overlap with her peer's utterance. This prompted the peer to pay further attention to her production and edit her language. The transcripts revealed that the number of overlaps observed for the dominant/passive pairs (e.g., Mechanical pair 6=5; Meaningful pair 4=7) was strikingly lower than that observed for the collaborative pairs (e.g., Mechanical pair 4=93; Meaningful pair 8=78). This may imply that learners with high amount of overlap in their interactions may be well-matched in terms of collaboration.

Similar to previous studies (Brooks and Donato, 1994; Swain and Lapkin, 2000; Storch and Wigglesworth, 2003), the learners in the present study used L1 to focus attention on linguistic features, to retrieve lexical items, to establish a joint understanding of the activity and to maintain interpersonal relationship. Furthermore, the *use of L1* helped learners in a) checking the accuracy of their production by translating their responses to Farsi, b) formulating their responses and then converting them into English c) discussing text meaning and lexical choices and d) identifying various parts of the tape-recorded text.

The learners sometimes engaged in *private speech* when they encountered difficulty in the provision of answers or when they tried to retrieve particular items (such as past participle of the verbs and lexical items) from memory. They exhibited inner speech by lowering their voices, quietly reading or translating the sentences for themselves, commenting on their own productions and using particular expressions such as *OK* (*khob*), *yes* (areh), *let me see* (*bezar bebinam*), *wait* (*sab kon*) and *I think it is correct* (*fek konam doroste*).

9.4 Findings from the activities

The substitution drill provided the most explicit and direct way of focusing the learners' attention on the target linguistic forms. The discussions of grammar were mostly centred on the RC structure, particularly the choice and referent of the relative pronoun. Centre-embedded RCs (e.g., *Mr. Johns, who paints the house, is our neighbour*) took longer discussion than right-embedded RCs (e.g., *A conductor is someone who directs orchestra*). Furthermore, the latter was preferred to the former in many learners' output. This is in line with the predictions of the PDH and may imply that the centre-embedded RCs were more difficult to produce than the right-embedded RCs.

The transformation drill provided repeated opportunities for application of the RC rules. Evidence from the pair-talk interaction suggests that the learners resorted to their L1 in solving their problems and occasionally committed L1 transfer errors. This was frequently observed when they were checking the accuracy of their production based on the meaning of their sentences in Farsi.

Among the three Mechanical activities, the text-development activity produced the highest amount of discussion and collaboration. The learners readily offered and sought assistance and jointly solved their linguistic problems. Furthermore, the activity drew their attention to a wide range of linguistic features including various grammatical and meaning-based episodes. The learners solved their problems by

resorting to various knowledge resources such as meta-linguistic, textual and situational knowledge.

The picture description activity was the most successful activity in stimulating the highest amount of discussion among all six activities. The learners paid almost equal attention to grammatical and meaning-based features of the language. Evidence from the pair-talk interaction suggests that they were consciously involved in conceptualising and formulating their language by searching for lexical items, matching the meaning part of the retrieved items with the information contained in their messages, and grammatical and phonological encoding. Use of L1 and interaction with a peer assisted them in verbalising and externalising their thinking processes, which would otherwise have remained invisible to the observer.

Similar to the previous activity, the 'let's complain' activity involved learners in conceptualising and formulating the language. The learners frequently engaged in form-meaning connections, matching the content of the message to the lexical items retrieved from their lexicon, monitoring the accuracy of their productions and syntactic and morphological arrangement of their responses. These procedures sometimes led them to notice their linguistic limitations in expressing their intended meaning. This provides support for Swain's (2000) argument that output promotes noticing which in turn may make learners aware of their linguistic deficiencies.

The dictogloss provided opportunities for the learners to negotiate on the content and form of the language. Overall, the meaning-based episodes occurred more frequently than the grammatical episodes. This confirms Skehan and Foster's (2001: 189) view that when learners are 'allowed to allocate attention freely, [they] will prioritize concern for content over concern for form'. Pairs of learners started reconstructing the text by first creating the content of the message in Farsi and then producing it in English. Compared to other activities, which were production-based and abundant in input, the dictogloss was partly comprehension and partly production and presented a great deal of difficulty for the learners. During the listening phase, the learners mostly focused on the content of the text; however, in the reconstructing phase,

converting the content into form seemed to be difficult for the majority of the learners. So, they frequently expressed difficulty in recognising segments of speech on the tape and understanding the lexical and syntactic details of the text. Furthermore, as Anderson and Lynch (1988) have argued, the learners' limitations in sociocultural and contextual knowledge of English also contributed to limited understanding of the text. As a result, they took very short notes, based on which they produced either conjoined sentences with *and* and *but* or complex sentences missing the RCs in the middle. Overall, the activity was successful in stimulating the learners to notice the hole or gaps in their interlanguage.

Overall, the collaborative output activities seemed to play a significant role in the acquisition of both declarative and procedural knowledge in the present study. The focus of LREs tells us that certain types of knowledge and procedures were practised during completion of the activities. I provide two illustrative examples below. The discussions during the picture description and 'let's complain' activities predominantly involved such episodes as *vocabulary search* and *word meaning*. It was clear that the learners were tapping into the linguistic knowledge stored in their mental lexicon, for example, by asking which word would best match the intended meaning. This mainly involved the declarative knowledge, which may be acquired through external feedback provided by their partners. On the other hand, in the substitution and transformation drills, it seemed that the learners were changing their declarative knowledge to procedural knowledge by repetitive practice and frequent noticing of the grammatical features during completion of the items. For instance, the ability to choose the right relative pronoun without thinking relies on procedural knowledge. These procedures (e.g., omission of redundant pronoun), which were once carried out with conscious attention and continuous support of the peer, later became automatised. That is, the learners did not refer to their memory or their peers on how to form a relative clause. Therefore, as de Bot (1996) has mentioned, the procedures were perhaps strengthened by repeated connection made between transmitted information in the long-term memory and procedures carried out in the formulator. Nonetheless, the ability to apply a rule in a Mechanical drill does not imply that the learners would be able to apply it automatically in real

communication. The problem with such drills is that they separate form of the language from its meaning and use, whereas in real communication the focus of attention is on the meaning of the message and how to communicate it.

9.5 Implications for further research

The findings from the present study have a number of important implications for future research. The Mechanical and Meaningful activities might have produced different results if they had involved learners in individual completion of the activities. To find out whether similar results are obtained from the comparison of the output activity types, further research is strongly recommended to investigate these activities involving collaborative and individual learners. Furthermore, the present study did not address the time factor. Would time weaken the effect found for both training conditions? Thus, future studies should involve delayed post-test to examine the long-term effect of each output type.

The comparison of the three tests showed that the learners' scores in the comprehension test were significantly different from and higher than their scores in the production tests. In the present study, only three testing measures were employed, mainly to minimise the duration of the testing sessions (which was already one hour for the three tests). Further work needs to be done using multiple tests of comprehension and production such as *grammaticality judgment* and *picture cued production* tests as well as production tests inducing spontaneous use of the target linguistic forms. This could make it possible to draw a more reliable conclusion on whether learners perform differently in comprehension and production of RCs in various testing situations.

Further research is also suggested to investigate the order of acquisition of English RCs in both comprehension and production. It would be interesting to examine the learners' production and comprehension of English RCs using multiple tests and tasks in different modalities. The study could additionally focus on learners' performance over time by assessing their progress on two or three occasions.

Finally, with respect to the learning of English RCs in the present study, the accurate and target-like attainment of the RCs was considered as the evidence for learning. However, there were some instances in the learners' productions which indicated signs of learning (for example, no response in the pre-test, but a response with incorrect relative pronoun or incorrect RC positioning in the post-test; conjoined simple sentences with conjunctions such as *because* in the pre-test, but a response containing an RC with resumptive pronoun in the post-test). The learners did not show a reverse order of acquisition — for example a response in the pre-test but no response in the post-test. This shows that learning (*i.e.* target-like attainment) may not happen instantly and within a short time period. Instead, learners may pass through some interlingual stages when learning this structure. A study similar to the present study should be carried out to examine what interlingual stages L2 learners are involved in while learning English RCs and whether collaborative dialogue facilitates the movement from the earlier stages toward the end state of learning.

In the present study, although the result of the product data (test scores) indicated no difference in the progress for the two output groups, the process data (LREs) indicated significant differences between the two groups in terms of various LRE features. A major implication for the design of future research involving LRE analysis is to employ dyad-specific post-test items, which should contain those linguistic features discussed by the learners during the completion of the activities. This could make it possible to examine how well the linguistic features learners have focused on during collaborative work are learned (Swain and Lapkin, 1998). Further research into the nature of LREs in terms of their quantity, quality and their relationship to learning linguistic feature would be very fruitful line of enquiry. This line of research can explore the quantity and quality of LREs in learners' interactions comparing mixed-ability dyads (high scorer — low scorer) to same-ability dyads (high scorer — high scorer or low scorer — low scorer). Such a study will further need to elicit the participants' reflections on the experience of dyadic work after completion of the activities and without being informed of their peer's proficiency level. One speculation is that the low scorers in mixed-ability dyads may benefit from further discussion and interaction with their peers, whereas high scorers may be

uncomfortable with the repetitious discussions, corrections and explanations they have to provide for their peers.

Time on task was not controlled in the present study. As a result, it differed across and within the two groups. This was partly due to the differences in the nature of the activities and individual differences between the learners. Some of the activities were delivered within a short time; for example, the input for the dictogloss included only a one-minute tape-recording delivered all at once, whereas the input for other activities such as 'let's complain' was isolated items which took a great deal of time for reflection. With respect to the individual differences between the learners, while some pairs followed the instructions and spent exactly 30 minutes on each activity, others were too slow to complete the activity within the scheduled time. Since spending more time on the activity in the present study showed a positive correlation with more production of LREs, and the production of more LREs, in turn, had a positive relationship with the progress of at least a group of learners (low scorers), it would be interesting to find out how learners would perform in a controlled exposure time and to what extent their discussions may contribute to learning.

It is also possible that individual learners, when randomly assigned to pairs, will produce entirely different results. The participants in the present study were not randomly assigned to pairs. Since they were attending two intact classes, which met on different days of the week, random assignment could have caused some confusions with respect to the technical issues (e.g., which learner or pair received which activity and at what time). Therefore, instead of random assignment of individual learners to output groups, the two classes were randomly assigned either to the Mechanical or to the Meaningful group. This allowed the orderly collection of data from pairs of learners belonging to the same class at a specified time of the week.

In the present study, learners were free to interact either in L1 or in L2. Future research will need to assess the effect of mediating language on creating learning opportunities, particularly in grammar-based activities, which may require more

discussion using metalinguistic knowledge and grammatical terminology than other activities. Comparison of the performance of learners on two occasions — by allowing them to, first, interact in L1 and then, to interact only in L2 in two similar activities — may demonstrate the effect of mediating language on creating learning opportunities, attention to linguistic features, pattern of interaction and collaboration, and resolution of the problems encountered in LREs.

Finally, the present study focused on Farsi learners of English at low intermediate level. Future research on the current topic is, therefore, recommended involving learners from other L1 backgrounds. Comparison of the learners from the same L1 background with those coming from different L1 backgrounds, while working on collaborative output activities, also seems to be an interesting line of research.

9.6 Pedagogical implications

The first pedagogical implication from the present study is that material developers and instructors of English to Farsi learners at low intermediate level should include a balanced combination of productive and receptive activities for instructional and assessment purposes. This may promote integrated progress in both receptive and productive abilities of the learners and may inform the instructors of the actual abilities and processing problems of the learners. Relying on either production or comprehension in assessment may underestimate or overestimate the knowledge of learners in English RCs.

The materials used for Farsi learners at high-school level present all relative pronouns (e.g., who, whom, that, which, whose) at the same time. The difficulty involved in processing and producing the lower structures in the hierarchy may impede the learning process of higher structures, too. Teachers may assume that the difference between the RCs is only in the function of relative pronouns (e.g., whose for possessive cases); however, as mentioned earlier, in comprehending and producing an RC, learners need to know a) how each word fits into the sentence

structure, b) what the function of the relative pronoun is and c) which word is being modified. These points are particularly important for the accurate production of RCs and must be systematically practised through comprehension and production activities.

Thus, an important practical implication in teaching the structure of English RCs is to consider their relative difficulty prior to instruction by, first pre-testing the learners, and then presenting the easier structures (those RCs higher in the hierarchy) and eventually adding the more difficult structures (those RCs lower in the hierarchy). Although some L2 researchers, based on the typological markedness relationships, have claimed that instruction on a more difficult or marked RC can generalise or project to easy or unmarked RCs, their studies are very limited in generalisability. For example, in Eckman *et al.* (1988), Doughty (1991), Izumi (2002) and Izumi and Izumi (2004) the participants received instruction on lower levels of hierarchy but improved on both lower and higher levels. It can be argued that these studies involved learners of English in an L2 context, whereby the participants were exposed to English in the wider community. Furthermore, their studies involved learners who were 'ready' for the acquisition of RCs, in other words, the very beginning level learners, who had not acquired subject RCs, were not allowed to participate in the study. Since these findings have not been explored in a foreign language learning context and particularly, as Izumi (2007: 358) has acknowledged, with 'unready' learners, it is difficult to generalise those findings to the context of the foreign language learning.

The study takes us one step closer to understanding of the benefits of the more Meaningful output. The activities examined in the present study provided various opportunities for learning a wide range of linguistic features. We observed that the Meaningful activities generated more LREs than the Mechanical activities. Furthermore, in addition to the structure of English RCs, they generated discussions on various linguistic features. Therefore, these activities can be seen as more economical than the Mechanical exercises since various linguistic areas can be targeted by using a single activity.

Evidence from the pair interaction suggested that not all pairs co-constructed knowledge and jointly solved the problems. Some patterns of interaction (e.g., dominant/passive), which seems to benefit only one learner, may suggest that EFL teachers should not confine themselves to simple configuration of learners into pairs, leaving it to chance that they will collaboratively complete the activity. Instead, they should monitor the exchanges between the learners, by for example, observing the level of participation and frequency of conflicts in reaching agreements. Attending to the pattern of *correction* carried out by the individual learners and presence or absence of *overlap* and *repetition* may further inform them of their learners' level of participation in the activity and their degree of engagement with the peer's contribution. Based on these observations, teachers should make further decisions on reassignment of the learners to different dyads or groups if they notice that some learners are not actually engaged in collaborative completion of activity and do not benefit from the dyadic work.

We further noticed that some learners, although collaborative, provide incorrect feedback for each other. They possess wrongly formulated rules about relative clause structure and pass this knowledge to each other. To induce 'unlearning' these already learned knowledge, and prevent passing this information to their peers, it is necessary to provide feedback to eliminate the fossilised errors. Of course, sometimes, a more competent learner is able to provide correct feedback, but since the incorrect rules are so deeply engraved in her peer's memory and since her peer does not rely on her knowledge, then an incorrect decision may be preferred over the correct one. The wrongly formulated knowledge may be transferred not only to the subsequent learning situation but also to the peer who once possessed the correct knowledge. Thus, it is strongly recommended that feedback be provided by the instructor after the completion of the collaborative activities.

The present study provided evidence on how learners used L1 to reflect on their language in several ways. From a sociocultural perspective, learning and development originates in culture and society, and such a significant social experience of the learners, *i.e.* learning an L1, can not be ignored in their subsequent

learning situations. Therefore, it can be suggested that EFL instructors in monolingual contexts should allow learners, particularly at low intermediate level, to use their L1 as a medium of thinking and interaction in grammar-focused activities. In the present study, the directions given at the start of the sessions indicated using either Farsi (L1) or English (L2). This allowed the participants to use L1 throughout their interactions. Unfortunately, it is not clear whether they used L1 because of being comfortable with it or because of being unable to interact in L2. Should the study provided a direction such as 'use Farsi only WHEN you think you can NOT interact in English', then it could be possible to tell in what situations use of L1 is extremely urgent. However, by comparing the amount of L1 use across the pairs and the activities, it appears that the weaker learners used more L1 than the stronger learners and the more controlled activities consumed less L1 than the less controlled activities in the continuum. This realisation gives us a clue on the most possible places where L1 use is likely to be appropriate. Firstly, the very low proficiency learners would need to use L1 whenever interaction in L2 is extremely difficult, (e.g., when explaining a grammatical rule requires metalinguistic terminology). Furthermore, the activities such as text-development and dictogloss which are focused on meaning and require extended discussions and explanations of the problem would require a great deal of L1 use. This, however, should not indicate as a support for unconstrained use of L1 in such activities. Instead, the pedagogical activities should be designed so as to diminish the use of L1 and promote interaction in L2.

We observed that the learners sometimes switched to private or inner speech, which seemed to be essential in checking the accuracy of their production and dealing with difficult parts of the activities. It can be suggested that instructors should not expect that learners should interact with each other all the time when they are assigned to dyads. Learners, in fact, need some pauses to engage in inner speech and they should not be deprived of the opportunities to interact with themselves.

9.7 Conclusions

The present study set out to investigate the acquisition of English relative clauses by Farsi learners during collaborative output activities. In particular, the study sought to determine whether the Meaningful output would produce greater benefits for learning than the Mechanical output. The comparison of the learners' performance before and after the treatment showed that the two groups did not differ in their improvements. One possible explanation is that the difference between the groups may have been washed out by feedback provided by peers.

The analysis of the process data obtained from the tape-recorded interaction revealed significant differences in terms of the focus of the learners' attention and value of discussions. While the Mechanical pairs predominantly focused on grammar, the Meaningful pairs discussed grammar *and* meaning. Since the tests focused on a grammatical feature of the language *i.e.* the relative clause, this may explain why the two groups did not differ in their progress. Therefore, apart from the need to consider LREs in a study of collaborative output, it is also important to assess the progress in terms of the points discussed during collaboration. The result of LRE analysis showed that the Mechanical group discussed the structure of relative clauses in 50% of their episodes, whereas the Meaningful group, who did not differ in their gains from the Mechanical group, discussed the structure of relative clause in 20% of their episodes. This evidence suggests that in 80% of the episodes, the students in the Meaningful group were learning aspects of language other than the correct use of the relative clauses. Thus, these findings suggest that the use of Meaningful activities may be more economical than the Mechanical exercises since the product is richer.

The present study contributes to the existing body of research on collaborative output in a number of ways. Firstly, the value of LREs in stimulating learning opportunities was observed in the performance of the learners with low proficiency: the more LREs produced by the low scorers, the more progress was made in the learning of relative clauses. Furthermore, there was a significant relationship between time on task and the number of LREs produced by all learners.

The analysis also revealed that the majority of the problems encountered during the pair interaction were correctly solved. Therefore, this may alleviate the concern of some SLA professionals about the incorrect provision of feedback during collaborative interaction. Another important finding is that weighty episodes are associated with grammatical episodes. This may suggest that learners who practise grammar intensively are more likely to extend their discussions and use metalinguistic knowledge when focusing on grammar than on meaning.

The differences evidenced in the productive and receptive abilities of these learners may indicate that such differences may exist in other EFL communities. In the present study, Farsi learners' comprehension of English relative clauses was significantly better than their production. This will definitely need further attention to provide more practice opportunities to improve both receptive and especially productive abilities of learners.

The study further provides evidence on the benefits of collaborative output activities. The low intermediate learners in the present study showed positive effects of working *collaboratively* on Mechanical grammar-based exercises. Thus, such activities can be seen as particularly useful in clarifying structural forms of the language and focusing the learners' attention on those forms in the initial stages of learning. Eventually, learners may find it easier to express their intended meaning accurately when engaging in meaningful and communicative tasks in a formal classroom setting. Therefore, it is necessary to consider the pedagogic activities across a continuum ranging from more Mechanical to more Meaningful.

Since the present study did not establish a strict laboratory setting such as control over exposure time to input, it may realistically reflect how L2 learning occurs in a classroom setting, and as such may be of interest to applied linguists and language teachers.

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Appendices

Appendix 1

Consent Letter*

Please read the following information carefully.

Research/Study: Materials for English grammar
Researcher: Shirin Abadikhah
Affiliation: University of Edinburgh, UK; University of Mazandaran, Iran.

Description of the study
I would like to invite you to participate in my research study into English grammar. Your participation would be entirely voluntary and would not affect your scores in your regular English course. In addition to the learning benefits that I hope the study will bring you, there will be a (small) present to thank you for your participation.

The main elements of the research are: first, a test to see whether the study materials will be suitable for you; then, three exercises; and a final test. If my materials are not suited to your grammar level, you need not take any further part in the study after the first test.

In the exercises, which will take place every two weeks, you will be working together with one other student, to complete the exercise using pen and paper. You will be able to talk freely to your partner, in Farsi or in English, about what you think the best answer is. I will be tape-recording your conversation, in order to help me to see how the exercises work for different pairs of students.

Time
Each exercise will take approximately 30 to 45 minutes, once a fortnight. The tests each last about an hour. So, in total, I am asking for about 4 hours of your time, over a period of 8 weeks. You will need to come to school for all five study sessions about 45-60 minutes before the start of your regular English class.
If you are willing to participate in the experiment, please sign below and return the tear-off section to me or the secretary of the school. If you are under 16, please ask your mother or father to read this form and sign it, for you to return the bottom section.

Many thanks
Shirin Abadikhah

REPLY SLIP

I have read and understood the information in this form.

I agree to participate in the study / I agree to allow my child to participate in the study

Student's name: _____

Parent's name (if student is under 16 years of age) _____

Signature of student (or parent, as appropriate) _____

Date: _____

* The learners' copy was prepared in Farsi.

لطفا متن زیر را به دقت بخوانید.

مطالعه : مطالب درسی درباره دستور زبان انگلیسی
محقق: شیرین آبادیخواه
مرتبه علمی: دانشجوی دکتری دانشگاه ادینبرو (انگلستان) و عضو هیات علمی دانشگاه مازندران (ایران)

جزییات تحقیق:

می خواهم از شما جهت شرکت در تحقیق خود درباره گرامر زبان انگلیسی دعوت نمایم. شرکت شما کاملا داوطلبانه می باشد و در تعیین نمره درس زبان انگلیسی تان هیچ گونه تاثیری ندارد. علاوه بر منافع یادگیری که امیدوارم این تحقیق برایتان در بر داشته باشد، هدیه کوچکی نیز جهت قدردانی تقدیم حضورتان خواهد شد.

عناصر اصلی تحقیق عبارتند از: یک تست جهت بررسی اینکه آیا مطالب درسی برایتان مناسب است یا نه، سپس سه تمرین انجام خواهید داد و در آخر یک تست دیگر بعمل خواهد آمد. اگر مطالب درسی متناسب با سطح گرامری شما نبود دیگر نیازی به ادامه همکاری در تحقیق ندارید.
در حین حل تمرین ها شما با یک دانش آموز دیگر با استفاده از کاغذ و قلم یک تمرین انجام خواهید داد. شما می توانید آزادانه در مورد فراهم کردن پاسخ صحیح به فارسی و یا به انگلیسی با دانش آموز دیگر صحبت کنید. من مکالمه شما را ضبط خواهم کرد و در تحقیق خود استفاده خواهم کرد تا بدانم آیا تفاوتی بین گروههای مختلف در حل تمرین بوجود آمده است یا نه.

زمان بندی

هر تمرین تقریبا ۳۰ تا ۴۰ دقیقه (هر دو هفته یکبار) طول می کشد. هر تست نیز یکساعت زمان میبرد. بنابراین ، در کل ۴ ساعت از وقت گرانبهای شما را خواهم گرفت. لازم است که برای تمامی این پنج جلسه ۴۵تا ۶۰ دقیقه قبل از کلاس زبان یا اینکه قبل از ظهر هر زمان که با برنامه های دیگرتان تداخلی نداشته باشد در آموزشگاه حضور داشته باشید. من با همکاری شما زمان دقیق را تهیه خواهم کرد.
در صورتی که تمایل به شرکت در این تحقیق دارید لطفا زیر این برگه را امضا کنید و به منشی آموزشگاه و یا خودم تحویل دهید. در صورتیکه زیر شانزده سال سن دارید، لطفا از والدین خود بخواهید که این فرم را بجای شما امضا کنند و به آموزشگاه تحویل دهید.

با تشکر فراوان
شیرین آبادیخواه

.....

برگه پاسخ

من متن بالا را خواندم و آن را دریافتم.

من موافقم که در این تحقیق شرکت کنم / من موافقم که فرزندم در این تحقیق شرکت کند.

نام دانش آموز .....

نام والدین: (اگردانش آموز زیر شانزده سال است).....

امضا دانش آموز (یا والدین).....

تاریخ .....

Appendix 2

Test of conditional sentences for baseline study*

1. The Wright Family is talking about a possible holiday in the south of Spain. Complete the text using the correct tense of the verbs (present simple or future).

Mark: If we (go)..... in the summer, there (be).....more tourists and it (be)..... very hot. If we (go)..... at Christmas, there (not be)..... as many tourists and the weather (be) ..... cooler.

Carol: If we (take)..... the car, it (take)..... much longer to get there, but we (be able to)..... take more luggages with us.

Anna: If we go by plane it (be)..... quicker, but it (cost)..... more too, and we (not see)..... anything of France.

2. Oliver is depressed at the moment. He is talking about things he has not got and things he cannot do. Complete the sentences with the correct tense of the verb (past simple or conditional).

1. If I (have).....more money, I (be able to).....get a flat.
2. I (find)..... a better job if there (be)..... more jobs available.
3. I (be)..... happier if I (have).....more friends.
4. If I (be).....more adventurous, I (go)..... abroad.
5. My parents (not be).....so critical if they (understand)..... me better.

3. Complete the dialogue, putting the verbs into the correct tense.

Mary: If you (want)..... to learn Spanish, you must go to Spain. If I (be) ..... you, I (spend) .....a month in Spain.

John: No, I couldn't afford it. If I (go) ..... to Spain, I (have to) .....pay for my lessons and my accommodation.

Mary: Well, (you go) .....if you (not have to) ..... pay for your accommodation? You see, I've got some Spanish friends in Cordoba. You (be able to) ..... stay with them. I (write) ..... to them if you (like) .....

John: But if I (stay) ..... with your friends, I (have to)..... pay them.

Mary: No, it (not be) ..... necessary. They want to learn English, so if you (give) ..... them English lessons, you (be able to) ..... stay there free.

*Source: Bolton, D. & N. Goodey (1996). English Grammar in Steps. London: Richmond Publishing (page: 123).

Appendix 3

Input sheet (English version)

Types of relative pronouns:

1. Relative pronouns do two jobs in the sentence. They are used as the **subjects** or **objects** of the verbs, like other pronouns; at he same time, they join clauses together, like conjunctions.

- What's the name of **the student? <u>She</u>** just *came* in?
- What's the name of **the student <u>who</u>** just *came* in?

In the second example, **<u>who</u>** replaces **<u>she</u>** as the subject of *came*, and also allows us to join the two sentences into one.

2. The most common relative pronouns are **who, whom, which** and **that**. **Who** and **whom** are used for people; **which** is used for things. In defining relative clauses, we very often use **that** instead of other relative pronouns, especially in a conversational style.

- I don't like **people who** lose their tempers easily. (Subject position/ human)
- I don't like **people that** lose their tempers easily.

- Cheese, eggs and milk are **foods which** give us protein. (Subject position/non-human)
- Cheese, eggs and milk are **foods that** give us protein.

3. **Whom** (which refers to the object of a verb or a preposition) is rather unusual, especially in conversational English. It is generally either left out, or replaced by **who** or **that**.

- The **man who** you met was my professor. (object position/ human) .
- The **man that** you met was my professor.
- The **man** you met was my professor.

- The **book which** I read was about history. (object position/ non-human).
- The **book that** I read was about history.
- The **book** I read was about history.

- The **man who** she lives **with** is very generous. (object of preposition/ human)
- The **man that** she lives **with** is very generous.
- The **man** she lives **with** is very generous.
-
- The **room which** we are standing **in** is very large. (object of preposition/non- human) .
- The **room that** we are standing **in** is very large.
- The **room** we are standing **in** is very large.

Restrictive/ defining and non-restrictive/ non-defining relative clauses

4. There are two main kinds of adjective clauses: defining and non-defining. **Defining clauses** give essential information about the previous noun in the sentence.

- The package **which arrived this morning** is on the desk.
- Is that the woman **who wants to buy your car**?

In **defining clauses**, we very often use **that** instead of the other relative pronouns, especially in a conversation style.

- The package **that arrived this morning** is on the desk.
- Is that the woman **that wants to buy your car**?

In **defining relative clauses**, we often leave out the relative pronoun if it is the **object of the verb** in the relative clause. This is extremely common in conversational English.

- He's a man **people like at first sight**.
- I've lost the book **I borrowed this morning**.

5. Non-defining clauses give extra information about the previous noun in the sentence. They are rather unusual in conversation and much more common in written English. A non-defining clause is separated from its noun by comma(s) in written English and pause in spoken English (because it is not a necessary part of the meaning of the noun):

- The desk in the corner, **which is covered in books**, is mine.
- I've just met Mrs Harris, **who wants to buy your car.**

That cannot be used in **non-defining clauses**, and object pronouns cannot be left out.

- I passed him a large glass of water**, which he drank immediately**. (non-defining)

But you can use **that** or omit the relative pronouns in **defining relative** clauses.

- The water **that you drank last night** was not safe. (defining)
- The water **you drank last night** was not safe. (defining)

Preposition can come at the end of non-identifying relative clauses.

- She spent all evening talking about her latest **book, which none of us had ever heard of.**

Input sheet (Farsi version)

انواع ضمایر موصولی

1. ضمایر موصولی در جمله دو نقش را ایفا می کنند ،آنها اولا نقش فاعل یا مفعول را بازی می کنند ، ثانیا دو جمله ساده را بهم ربط می دهند. به مثال زیر دقت کنید.

- What's the name of **the student? <u>She</u>** just *came* in?
- What's the name of **the student <u>who</u>** just *came* in?

در مثال دوم **who** جایگزین **She** که فاعل فعل **came** است می شود، بنابراین نقش فاعل آن جمله را ایفا می کند. **who** همچنین دو جمله را به همدیگر ربط می دهد.

2. متداولترین ضمایر موصولی **which, whom, who و that** هستند، **who** و **whom** برای اشخاص استفاده می شوند و **which** برای اشیاء. گاهی اوقات می توان در عبارتهای موصولی بجای **which, whom, who** از **that** استفاده کرد.

- I don't like **people who** lose their tempers easily. (وجه فاعلی برای انسان)
- I don't like **people that** lose their tempers easily.

- Cheese, eggs and milk are **foods which** give us protein. (وجه فاعلی برای اشیاء)
- Cheese, eggs and milk are **foods that** give us protein.

- The **man who** you met was my professor . (وجه مفعولی برای انسان)
- The **man that** you met was my professor.
- The **man** you met was my professor.

- The **book which** I read was about history. (وجه مفعولی برای اشیاء)
- The **book that** I read was about history.
- The **book** I read was about history.

- The **man who** she lives **with** is very generous. (وجه مفعول حرف اضافه برای انسان)
- The **man that** she lives **with** is very generous.
- The **man** she lives **with** is very generous.

- The **room which** we are standing **in** is very large. (وجه مفعول حرف اضافه برای اشیاء)
- The **room that** we are standing **in** is very large.
- The **room** we are standing **in** is very large.

3. **whom** که معمولا در وجه مفعولی و مفعول حرف اضافه برای انسان به کار می رود،در محاوره انگلیسی بسیار غیر معمول است و معمولا یا حذف می شود و یا اینکه با **who** و **that** جایگزین می شود.

Identifying and non identifying relative clauses

عبارتهای موصولی ضروری و غیر ضروری

4. عبارتهای موصولی به دو دسته تقسیم می شوند: ضروری و غیر ضروری. عبارتهای **ضروری اطلاعات اساسی و مهم** درباره اسم ماقبل ارایه می کنند. بدون آنها معنی اسم ماقبل ابهام دارد.

- The package **which arrived this morning** is on the desk.
- Is that the woman **who wants to buy your car**?

در عبارتهای ضروری ،مخصوصا در سبک محاوره ای ، می توان از **that** به جای دیگر ضمایر استفاده کرد:

- The package **that arrived this morning** is on the desk.
- Is that the woman **that wants to buy your car**?

در عبارتهای ضروری ، اگر ضمیر در **وجه مفعولی** و یا در **وجه مفعول حرف اضافه** باشد غالبا حذف می شود.

- He's a man **people like at first sight**.
- I've lost the book **I borrowed this morning**.

5.عبارتهای موصولی **غیر ضروری** اطلاعات **اضافی** درباره اسم ماقبل در جمله ارایه می کنند. آنها در مکالمه روزمره زیاد بکار نمی روند و معمولا در نوشتار استفاده می شوند. یک عبارت غیر ضروری در نوشتار با دو ویرگول و در گفتار با مکث از دیگر قسمتهای جمله جدا می شود.

- The desk in the corner, **which is covered in books**, is mine.
- I've just met Mrs Harris, **who works in the library.**

در عبارتهای **غیر ضروری** از **that** نمی توان استفاده نمود و در وجه مفعولی، ضمایر را **نمی توان** حذف کرد.

- I passed him a large glass of water**, which he drank immediately**. (غیرضروری)

اما در عبارتهای موصولی **ضروری** از **that می توان** استفاده نمود و در وجه مفعولی، ضمایر را **می توان** حذف کرد.

- The water **that you drank last night** was not safe. (ضروری)
- The water **you drank last night** was not safe. (ضروری)

حروف اضافه را می توان در **انتهای** عبارتهای غیر ضروری آورد.

- She spent all evening talking about her latest **book, which none of us had ever heard of.**

Appendix 4

Substitution

Make/ people laugh

Example: A clown is someone who makes people laugh.

Boil/ water

Example: A kettle is something that/ which boils water.

Put out/ fire

1. **A fire fighter is someone**.....

Cook/ food

2. **A chef is someone**.....

Direct/ orchestra

3. **A conductor is someone** .....

Paint/ house

4. Mr. Jones,....., is my neighbour.

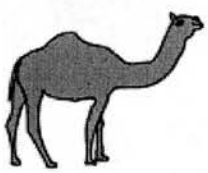
Is/ nurse

5.My sister, Anna,....., helps patients.

Make/ honey

6. A bee is an animal.....

Live/ desert

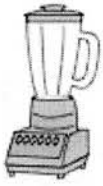


7. A camel is an animal.....

Carry/ patients

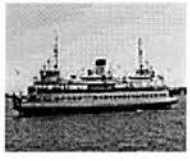
8. An ambulance is a vehicle.....

Produce/Blenders



9. Philips, ..., is a famous company.

Ship



10. Titanic, ...,sank many years ago.

Example

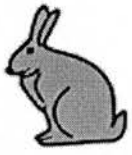
Painter/ use

A paint brush is something that a painter uses.

Baby/ love

1. A Teddy bear .....

Rabbit/ eat

2. A carrot .....

Fireman / use


3. A fire-extinguisher.....

Soldier/ drive


4. A tank .....

Angler/ use


5. A fishing rod.....

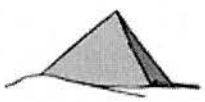
Swimmer/ wear


6. A swimsuit.....

My father/ buy

7. Seiko, ……..……, works quite well.

Egyptians/ build



8. The Pyramids,……., attracts many tourists.

teacher/ introduce

9. The new student is Sarah, ……

Alexander Graham Bell, invent

10. The telephone,……..…., is used all over the world.

Example

sleep in

A sleeping bag is something that you sleep in.

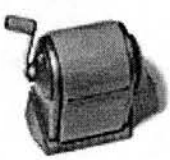
keep money in

1. A bag is something .....

sit on

2. A chair is something .....

sharpen pencils with



3. A sharpener is something .....

make tea in

4. A teapot is something .....

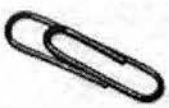
play music with

5. A guitar is something.....

write in

6. A note book is something .....

Fasten papers together with



7. A paper clip is something.....

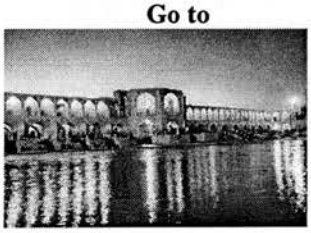
Talk to

8. My father,....., was very angry.

Play for

9. Our national team,....., will go to Germany.

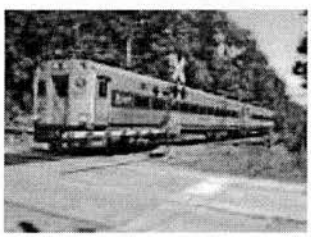
Go to



10. Do you remember Pol Khajoo,.....?

Appendix 5

Transformation



- This **train** was very crowded. (use **that/ which**)
- This is the **train that** was very crowded.
- I didn't like this **train**. (use **that/ which**)
- This is the **train that** I didn't like.
- We went on this **train** to Goa. (use **that/ which**)
- This is the **train that** we went on to Goa.

- This **family** was very rich. (use **that/ which**)

1. This is ....

- I visited this **family**. (use **that/ which**)

2. This is .....

- I stayed with this **family** in Bombay. (use **that/ which**)

3. This is .....

- **Rita** was the youngest girl of the family. (use **who**)

4. This is .....

- I met **Rita** at the university. (use **whom**)

5. This is .....

- I went with **Rita** to India. (use **whom**).

6. This is .....

- This **restaurant** was in the city centre.(use **that/ which**)

7. This is .....

- These **people** served us. (use **who/ that**)

8. These are.....

- We ate at this **restaurant** every evening.(use **that/ which**)

9. This is .....

- **Hotel Nova** is very expensive. (use **which**)

10. This is.....

- I rented this **room**. (use **that/ which**)

11. This is .....

- We stayed at **Hotel Nova** in Goa. (use **which/ where**)

12. This is .....

- These **Indian friends** gave me their address.(use **who/ that**)

13. These are.....

- I helped these **Indian friends** (use that/ who/ whom)

14. These are.....

- We spent a lot of time with these **Indian friends**.(use **who/that/ whom**)

15. These are .....

- This **elephant** belonged to a rich man. (use **that/ which**)

16. This is .....

- Children loved this **elephant**.(use **that/ which**)

17. This is .....

- I had a ride on this **elephant**. (use **that/ which**)

18. This is.....

- **Colva beach** is very beautiful.(use **which**)

19. This is .....

- My friends introduced me **Colva beach**. .(use **which**)

20. This is .....

- We sat on **Colva beach** everyday. (use **which**)

21. This is .....

- These **shops** were full of accessories. (use **that / which**)

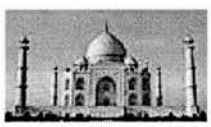
22. These are.....

- Tourists visited these **shops** quite often. (use **that / which**)

23. These are.....

- We bought the accessories from these **shops**. (use **that / which**)

24. These are.....



- **Taj Mahal** is located in Agra, near to Delhi. (use **which**)

25. Here is.....

- I went to **Taj Mahal**. (use **which**)

26. Here is.....

- Many Tourists visited **Taj Mahal**. (use **which**)

27. Here is.....

- This **plane** was late.(use **that/ which**)

28. This is ……

- My friends had lost **this plane** (use **that/ which**)

29. This is ……

- We flew back on **this plane**. (use **which**)

30. This is ……

Appendix 6

Text-development

a. I never thought of **lots of things**.
b. You took part in **the activities**.
c. I didn't like **one or two people**.
d. That **person** lives in Belfast.
e. You were talking to **the girl.**
f. The **officers** looked after you.
g. She had been to **the camp**.
h. You spent **time** at the camp.
i. I made **a new friend** in the camp.

Sally:	Hello, Hannah. Who's the girl (1) .....just now?
Hannah:	Oh, that's Maire. She's the new friend (2).....
Sally:	Is she the same person (3).....?
Hannah:	Yes. Do you know, that was the first camp (4).....?
Sally:	Really? - You enjoyed the time (5)....., didn't you?
Hannah:	Almost everyone enjoyed it. There were one or two people (6).....since their idea of fun was to fight each other- but not many.
Sally:	What were the activities (7) .....?
Hannah:	Really tough- but that was good. I did lots of things (8).....
Sally:	And what about the officers (9).....?
Hannah:	They were great. There was always someone you could talk to.
Sally:	That sounds good. Can you give me the address?
Hannah:	I can do better. I can show you the officer. He is a good friend of mine, now.

Dear Paul,

I had a terrible birthday yesterday; nearly everything went wrong. The computer (1)..... (uncle Toby/ give) broke, and the man(2)..... (come) to mend it couldn't understand what was wrong, so I'll have to take it back to the shop(3).....(be/ far from) my flat. Then, the new shelves (4) .....(my Dad/ put up) fell down immediately. The restaurant (5).....(take to/my Mum and Dad) was terrible, and the friends(6).....(invite) didn't come. Then in the evening, Peter,(7).....(I/ wait for), phoned and said that the invitation(8)..... (I/ send) him hadn't arrived.

But there were some good things. Mum gave me a radio alarm clock (9)..... (work) well! In the afternoon, Dad took me to an old woman (10)..... (I/ be very fond of). She said that one day I'm going to be a famous actress. Any way, thank you very much for the earrings (11).....(be really beautiful); they are the best present (12).....(I/ ever have). I'm wearing them now. I hope you can come back home soon.

With lots of Love from,

Marianna

Appendix 7

Picture description

Example: A clown is someone who/ that makes people laugh.

Example: A kettle is something that/ which boils water.

1. A soldier is someone ……..……...

2. A robber is someone ……....

3. A mechanic is someone…….. ……....

4. A waiter is someone..... .....

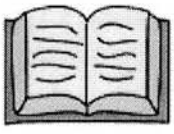
5. My father, ... ,works in police station.

6. Yuri Gagarin, ... , lived in Russia.

7.My pet ..... is called Cheetah.

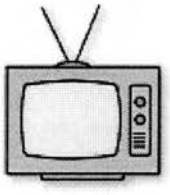
8. A washing machine is a machine.....

9. A rooster is a bird..... .....

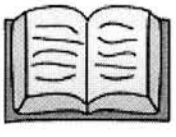


10 Boostan, ..., was written by Sa'di.


Example: An umbrella is something that <u>you</u> take in rainy weather.

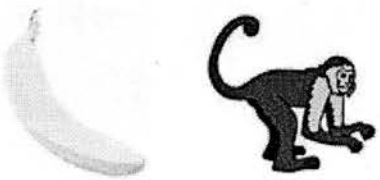


1. A television set is a box .....



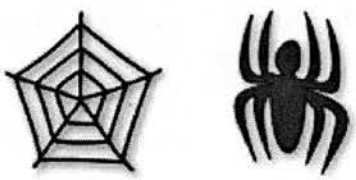

A book is something .....

3. An egg is something .....



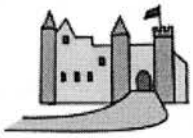
4. A banana is a fruit..... .

5. A paint brush is a tool .....



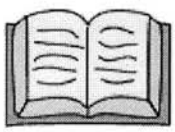
6. A spider-web is something.....

7. A robber is someone.....



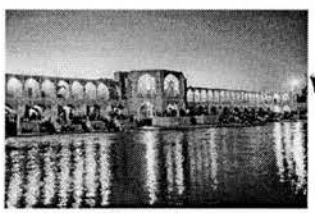

8. The Castle of Edinburgh,……., is in Scotland.

Hamlet **Shakespeare**




9. I have read Hamlet,……..……..

Pol- Khajoo **Tourists**

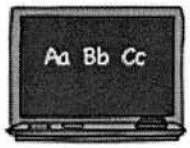



10. Pol-Khajoo, ……., is located in Isfahan.

Example

A plate is something that you eat food from.

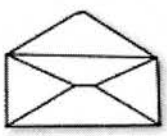
1. **A blackboard is something**.....



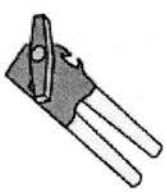
2. **A key is something** .....

3. **A ladder is something** .....

4. **An envelope is something**.....

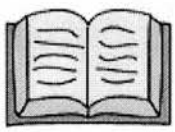


5. **A can-opener is something** .....



6. A cup is something .....

7. Niyavaran Library,.....,is closed today.



8. A Black and Decker hair drier, ..., is a good quality.

9. I lost my leather wallet, ...
.

10. Iran Air, ..., is very safe.

Appendix 8

'Let's complain'

Part A:

Example: Girl_ sit next to me

The girl **who/that sits next to me** is always cheating.
Relative Clause

1. (Teachers_ old)

.....

2. (Room- untidy)

.....

3. (My father, teacher,)

.....

4. (Children_ noisy)

.....

5. (Books_ expensive)

.....

6. (Sarah, friend,)

.....

7. (Food_ served at school)

.....

8. (Dress_ black)

.....

9. (Tehran, polluted city,)

.....

Part B:

Example: The exam_ take

The exam **<u>that/ which I took last week</u>** was very difficult.
Relative clause

1. (Friends_ met)

.....

2. (Computer_ use)

.....

3. (Cheetah(my pet), keep,)

.....

4. (Clothes_ buy)

.....

5. (Bag_ lose)

.....

6. (Dr. Ahmadi, visit,)

.....

7. (Car_ drive)

.....

8. (Dinner_ eat)

.....,

9. (New Interchange, study,)

.....

Part C:

Example: Bus_ get on

- The bus **that/ which I get on everyday** is very crowded.
  Relative clause

1. (School_ go to)

.....

2. (Bus_ wait for)

.....

3. (Hotel Lale, stay in,)

.....

4. (Book_ look for)

.....

5. (Party_ invited to)

.....

6. (Niki Karimi, interested in,)

.....

7. (Homework, work on)

.....

8. (Library, borrow from)

.....

9. (Shajariyan's music, listen to,)

.....

Appendix 9

Dictogloss

- به متن زیر که برایتان ضبط شده است به دقت گوش کنید.
- حال مجددا به متن فوق گوش کنید و درباره محتوای متن، نکته برداری کنید.
- اکنون به کمک دوستتان متن خوانده شده را بنویسید. شما می توانید از نکاتی که یادداشت کرده اید جهت نوشتن متن استفاده کنید.
- این متنی است که برایتان خوانده شد. حال، متنی را که نوشته اید با متن زیر مقایسه کنید.

Dear Paul,

I had a terrible birthday yesterday; nearly everything went wrong. The computer uncle Bill gave me broke, and the man who came to mend it, couldn't fix it. So I'll have to take it back to the shop. Then, the CD shelves, which my Dad put up, fell down immediately. The restaurant I took my Mum and Dad to was terrible, and the friends I invited didn't come. Then in the evening, one of the friends, I was waiting for, phoned and said that the invitation I sent him hadn't arrived.

But there were some good things. Mum gave me a radio alarm clock, which works well! In the afternoon, Dad took me to an old woman who is a fortune teller. She said that one day I'm going to be a famous actress.

Any way, thank you very much for the gold earrings, which are really beautiful; they are the best present I have ever had.

With lots of Love,
From Marianna

Appendix 10

Test of translation from Farsi to English

1. من خانه ای خریده ام که بسیار کوچک است.

.....

2. من ماشینی دارم که موتورش کار نمی کند.

.....

3. کسانی که به دیدن او می آمدند می خواستند درباره آینده شان بدانند.

.....

4. بیماری که پرستار ازاو نگهداری می کرد دیشب مرد.

.....

5. کشاورزی که اسبش دیشب مرد بسیار ناراحت است.

.....

6. آنها دوچرخه ایی را که والدینم هفته پیش برایم خریده بودند دزدیدند.

.....

7. اینها کتابهایی است که شما خواسته بودید.

.....

8. او به من جعبه ای داد که درش شکسته بود.

.....

9. پلیسی که دزد را گرفت دیشب تو تلویزیون بود.

.....

10. کتابهایی را که پیتر از کتابخانه به امانت گرفته بود (قرض کرده بود) گم شده اند.

.....

11. من دنبال یک پزشک خوب می گردم که بتوانم بهش اعتماد کنم.

.....

12. کتابی را که او به آن اشاره دارد دیگر چاپ نمی شود.

.....

13. من توانستم کاری را که تقاضا داده بودم بگیرم.

.....

14. نام کتابی که جایزه برد چه بود؟

.....

15. پشت خانه من، پارکی است که همیشه پر از سگ است.

.....

16. معلمی که شاگردانش همیشه سر کلاس خوابند علاقه ای به درس دادن ندارد.

.....

17. کسانی را که دیدم انگلیسی حرف می زدند.

.....

18. دختری که پیتر می خواهد باهاش ازدواج کند امریکایی است.

.....

19. من زنی را که تو باهاش داری صحبت می کنی می شناسم.

.....

20. پدرم سیگاری را که من از کوبا خریدم می کشد.

.....

21. بچه هایی که با آتش بازی می کنند درخطر هستند.

.....

22. آن کشور کوچکی است که جمعیتش رو به افزایش است.

.....

23. مردی که او عاشقش شد او را بعد از چند هفته ترک کرد.

.....

24. خانمی که کیفش را دزدیدند همسایه من است.

.....

Appendix 11

Sentence combination test

1. Your brother saw the girl.
   The girl handed the pencil to me.

.....

2. I've just met this woman.
   Her husband works in London.

.....

3. The elephant looked at the tree.
   The cat had often sat under the tree.

.....

4. She's studying maths.
   Many people hate maths.

.....

5. This is the girl.
   Her mother is from Canada.

.....

6. Betty dropped the note.
   Bill wrote the note to the teacher.

.....

7. The student received a prize.
   The student got the highest score in the exam.

.....

8. The teacher talked to the student.
   You lent your book to the student.

.....

9. The girl went to the police station.
   The girl's suitcase was stolen.

.....

10. Jane likes the teacher.
    The teacher gives easy exams to the class.

.....

11. I have a black cat.
    His eyes are blue.

.....

12. The shoes are too big.
My grandma bought the shoes for me.

.....

13. I received the letter.
I was waiting for the letter.

.....

14. We ate the sweets.
My mother bought the sweets.

.....

15. The flowers are beautiful.
The flowers grow in the garden.

.....

16. The man was angry.
His car had been damaged.

.....

17. My mother saw the present.
My friend gave the present to me.

.....

18. The father punished the little girl.
The little girl threw the dish at the little boy.

.....

19. Judy telephoned the girl.
Bill passed a note to the girl.

.....

20. We stopped at the museum.
We had never been into the museum.

.....

21. The bicycle was very expensive.
Your father gave the bicycle to Jim.

.....

22. The teacher looked at the girl.
I explained the sentence to the girl.

.....

23. They were sure to visit the town.
The town's location was little known.

.....

24. I went to the city centre.
The city centre is always crowded with people.

.....

Appendix 12

Test of translation from English to Farsi

2. My neighbour has a dog that barks every night.

.....

3. I talked to the girl whose car had broken down in front of the shop.

.....

4. He is the person that the police are looking for.

.....

5. The museum we want to visit opens at 12:00.

.....

6. The picture that you are looking at was painted by Van Gogh.

.....

7. The man whose daughter the police arrested is our neighbor.

.....

8. The dog whose bone you took is going to bite your leg off.

.....

9. The person who always tells the truth is not afraid of anything.

.....

10. Food which is fresh contains more vitamins.

.....

11. They were a group of college friends who I hadn't seen for several years.

.....

12. He lives in the house whose curtains are always drawn.

.....

13. The babysitter who the parents liked very much played with the child.

.....

14. She never saw the man who she gave the money to.

.....

15. George was one of the distant relatives whom she had never met.

.....

16. We ordered a book which was very expensive.

.....

17. She was the only woman who could make him happy.

.....

18. The spider that you killed was very dangerous.

.....

19. The students whose papers the teacher corrected right now passed the exam.

.....

20. He told a joke that we had already heard 100 times.

.....

21. The woman you spoke to was the manager of the company.

.....

22. The hotel which we stayed in was very cheap.

.....

23. The students who were late waited in the playground.

.....

24. This is the photo of the house I told you about.

.....

25. This is the company whose workers are always badly paid.

.....

Appendix 13

Transcription conventions

[	indicates overlapping talk
(.)	micro pause
(...)	long pause
CAP	indicates emphatic stress
Italics	Farsi
Bold	Translation of utterances from Farsi into English
↑	high rising intonation contour
?	questioning
Underlining	whispered or lowered volume than surrounding talk
[laugh]	laughter
[]	transcriber's comments
/ /	incorrect pronunciation
x	incomprehensible utterance
A-B-C-D-E	spelling
Ab-cd-ef	Syllabification

Appendix 14

LRE Framework

Table 1 Grammatical episodes

Categories and definitions	Examples/ Extracts from my Data
G1 *Choice of Relative Pronoun (RP):* The learners discuss the choice of relative pronouns; whether to use who, which, whom or that.	**S1**: A chef is someone who cook (.) the food. **S2**: Who or that? **S1**: That is also possible, that can be used for all of them.
G2 *Choice of relative clause (RCL) :* The learners discuss the choice of relative clauses, whether to use subject relative clauses or object relative clauses	**S1**: A banana is a fruit ee which has a lot of iron, vitamin. **Subject relative clause** **S2**: *Pas in inja hich kare hast dige haa?* Which ee **So what is this monkey here for?** **S1**: Which ee which *dust dare ahan.* **Likes it, ahan.** **S2:** Monkey **S1**: A banana is a fruit ee that monkey loves it. Loves it *doroste?* **object relative clause** **Right?**
G3 *Formulating a clause:* They discuss (request confirmation and offer solution) how to change their preverbal message into a correct relative clause.	**S1**: My father **S2:** My father is a, someone, is a person who works in a police station. *Doroste?* **Right?** **S1**: My father **S2**: Is a person **S1**: Is a person who works? **S2**: Yes.
G4 *Omission or retention of noun/pronoun:* Whether to omit or keep the noun or pronoun in the clause. For example, in the following sentence, 'it' is redundant, and must be omitted. (*This is the book that I bought **it**)	**S1**: There were one or two people **S2**: I didn't like them that I didn't like. **S1**: That I didn't like **S2**: *Marjae zamire mosuli nabayad qablesh badesh biyad ha*? **The reference of the relative pronoun doesn't come after it. Does it?**

	S1: Didn't **S2**: Like **S1**: *Pas in ham bayad cheez konim.* **So we have to make this *thing*.** **S2**: *Bale unham khatesh bezan. Doroste.* **Yes, omit that one too. That is now correct.**
G5 *Choice of defining/non-defining clause:* Whether it is non-defining clause so they must use comma and 'which or who' or defining clause, so they can use 'that' in all cases and no commas are needed.	**S1**: They are the best present I ever had. They are the best present <u>that or which which</u> **S2**: *Farqi nemikone, mikone?* **It doesn't make any difference, does it?** **S1**: *Areh.* **Yes** **S2**: <u>*Zaruriye.*</u> **<u>It is defining</u>.** **S1**: They are the best, they are the best presents which I had ever **S2**: Which I had ever **S1**: Had. <u>Which I ever had.</u> *Areh.* **Yes.** **S2**: Had.
G6 *Clause position: right- embedded or centre-embedded clauses:* Whether to put the clause after the subject of the main clause (centre-embedded) or after the object of the main clause (right-embedded). Example of centre-embedded clause: The book <u>which I bought</u> was very expensive Example of right embedded clause: I bought a book <u>which was very expensive</u>.	**S1**: My sister Anna **S2**: Anna **S1**: Who is nurse **S2**: <u>Who is nurse helps patients</u>. *Ino faqat inesho benevis.* **Just write this part**. **S1**: *Bebin*, <u>is a nurse who helps patients</u>. **See,** **S2**: *Chee*? My sister Anna↑ who↑ **What?** **S1**: Who is nurse, *kaśiye ke parastare komak mikone be bimarha.* **is a nurse who helps patients.** **S2**: My sister Anna who is nurse *mige khahare man ke* **It says my sister**

	who *parastare be bimarha komak mikone. Injuri khunde mishe* **is a nurse helps patients, it is read like this.** **S1**: Who is nurse.
G7 *Finding the referent of the relative pronoun:* The learners try to find the exact head noun to which the relative pronoun refers. Then, they apply a correct relative pronoun (e.g. which) for the referent (e.g. book).	**S1**: *Khob*, a book is something (.) **Ok** **S2**: ee which, that e **S1**: Something? Which or that you, *vali bayad faelesh* **But the subject** *farq kone. Dige dar morede in toozih nemidim.* **must be different. We don't explain about this** *In khodesh jomle vareye vasfiye. Shayad ham,* **anymore. This is itself a descriptive sentence. May be,** **S2**: Which (.) that, who writes, who writes? **S1**: *Ahan, mikhay begi neveshte shode tavassote nevisande? Na.* **Ahan, you want to say it was written by an author? no.** **S2**: *Na, Khunde mishe be vasileye shakhsi. Who bayad beshe dige.* **No, it is read by someone. We must use 'who' here.** **S1**: *Naa. akhe in who barmigarde be book, book ke* **No, but this 'who' refers to the book. 'Book' is not** *who nist. Bayad which bashe ya that bashe. Doroste?* **'who'. It must be 'which' or 'that'. Right?** **S2**: A book is something
G8 *Word order:* They discuss how to put the words in a correct grammatical order inside the sentences.	**S1**: A paint brush is something **S2**: Paint ee house paint house **S1**: Paint paint wall house **S2**: Walls of house, wall's house, house's walls.

	House's walls *ya* walls of house. **or** **S1**: That you paint walls of house
G9 *Subject-verb agreement :* Whether the subject is singular or plural, and accordingly, whether the verb should receive a third person singular /s/ or not.	**S1**:A tank is something that **S2**: Is something that **S1**: Soldiers **S2**: Sol- dires, drive it? [drive **S1**: [drive, dri**ves** **S2**: Sol**diers**↑ [S2 uses rising intonation here] **S1**: *Aha* soldier drives.
G10 *Verb tense/aspect:* This category includes correction or request for confirmation of the verb tense (past, present and future) and the verb aspect (simple, continuous, perfect)	**Example for tense:** **S1**: *Ke (.)* build (.) build *gozashteash chee mishe?* **Which** **What is the past tense of** *Sakhte shod.* **'build'? Was built.** **S2**: Build build, built *mishe[private speech].* **It is 'built'.** **Example for aspect:** **S1**: I lost my leather wallet, **S2**: I lost my leather wallet **S1**: ee That **S2**: That my mother *masalan* **For example 'that my mother',** **S1**: Give me for gift **S2**: For my birthday **S1**: Aha for my birthday **S2**: That my mother (.) had gave, given *mishe*? Me for my **Is it 'given'?** **S1**: Past perfect *estefade kardi?* **Did you use 'past perfect'?** **S2**: *Dade bud dige*. Birthday *khob* ee **She had given.** **Okay**
G11 *Auxiliary +verb* They discuss the helping or auxiliary verbs, whether to use them and if so which one	S1: An envelope is something that you can put your letters in. **S2**: *Areh. Bebin che alaki in hame can avordim ha,* that

	Yes, see how many 'can's we have used here. We you put letters in dige, *chera* can, **could write just this part 'that you put letters in'. Why have we used so many 'can's?** **S1**: *Areh hala gozashti dige khatesh nazan.* **Yes, now you've written them, don't cross them out.** **S2**: *Areh.* **Yes.** **S1**: *Beza farq bokone ba jomlehaye badi.* **Let it be different from our other sentences.**
G12 *Verb form : passive/ active* Whether to use the verb in active or passive form	**S1**: Cheetah who I kept **S2**: I kept **S1**: In home, **S2**: Lost **S1**: Lost **S2**: That night, last night. **S1**: *Naa* were was lost, *gom shod, bayad majhul* **No, was lost, we have to use** *biyarimesh*↑ **passive**↑ **S2**: *Gom shod. (...) mitunim lost ham biyarim dige.* **Was lost (...) we can also use 'lost'. Can't we?** **S1**: *Areh khob vlesh kon. Khob.* **Yes of course, forget it. Okay.**
G13 *Choice of preposition* Which preposition is appropriate in the sentence	**S1:**Yuri Gagarin who travelled **S2**: To the spaceship? *Areh?* **Yes?** **S1**: The astronaut. ***Naa.*** Spacecraft dige. **No. Just 'spacecraft'.** **S2**: With a spacecraft **S1**: Who travelled with spacecraft
G14 *Use of definite/indefinite article/ demonstrative adjective* Whether the nouns need to be preceded by a definite/ indefinite article (e.g., A, an, the)	**S1**: [A washing machine is a machine that wash **S2**: [A washing machine is a machine that wash **S1**: The cloths **S2**: A washing **S1**: *The nemikhad biyarim inja?*

	Don't we use 'the' here?
G15 *Gerund or infinitive* Whether / why the verb should receive an ING, or be in infinitive form.	**S1: Can- opener is something** **S2**: Which you use you use **S1**: For opening **S2**: For **S1**: Opening, ee opening **S2**: *Opening chera miyari? Chera ing mizari?* **Why do you use 'opening'? Why do you use 'ING'?** **S1**: For, *ba'd az for ing miyad.* **After 'for' the verb needs an 'ING'.** **S2**: Opening the can, the can
G16 *Conjunction* Whether the sentences need a conjunction (and, so, because, although) and which one to use. This category can also be considered under discourse category if the focus of the discussion is linking two sentences and at inter-sentential level.	**S1**: Teachers, old **S2**: My teachers who are very old **S1**: And I didn't know umm her teaching *nemifahmam.* **I can't understand.** **S2**: *Khob and nabayad biyarim dige.* **Okay, we must not use 'and' here.** **S1**: *Aha and nabayad biyarim.* **Aha, we must not use 'and'.** **S2**: My teachers (.) who are old don't don't teach good.
G17 *Genitive 'S* They discuss whether a possessive S is needed or not.	**S1**:Shajari- *chee* Sahjariyan music, listen to, Shajariyan, **What?** *mikhay 's badesh biyarim?* Shajariyan's music **Do you want to bring genitive S after it?** **S2**: Music **S1**: Which I listen to

G18 *Pronoun* The learners discuss the choice of pronouns including subject , object, possessive (e.g. whether to use it/ this/ they or them as illustrated in the example)	**S1**: That I stayed with it. With this **S2**: *Man* stayed **I** **S1**: With they **S2**: *Areh,* with them. *Ba anha.* **Yes. with them.** **S1**: Them↑(asking for confirmation) **S2**: *Areh.* **Yes.**

Table 2 Lexical or meaning-based episodes

Meaning-based Episodes	Examples
M1 *Considering clause choices* They discuss and choose a clause out of two or more possible choices.	**S1**: A soldier is someone **S2** : Who defends the country **S1**: Who works in the army
M2 *Considering lexical (vocabulary) choices* They discuss and choose a word out of two or more possible choices. The correction of a lexical item is also subsumed under this category	**S1**: A mechanic is someone who repairs, repairs **S2**: Who repairs **S1**: The car (.) **S2**: The machine, the car, **S1**: The machine **S2**: No the car, the machine *nemishe.* Repairs the car. **It can't be 'the machine'.** **Vocabulary correction:** **S1**: In the evening (...) in the evening wanting S2: Wanting **S1**: Wait wait *montazer bude.* Waiting for friends **Waited.** **S2**: Waited **S1**: Waited for friends **S2**: For her friends.

M3 *Word/phrase meaning* They ask the meaning of a word or phrase from each other. The typical sentence for this category is : *What does X mean?* Or *Does X mean Y?* The learners have the form at hand but they don't know the meaning.	**S1:** A spider web is something **S2:** Spider **S1**: Makes **S2**: Makes **S1**: Makes for, makes to, makes to ee catch, <u>catch</u> <u>*gereftan mishe dige.*</u> **<u>Catch means to catch</u>, doesn't it?** **S2**: *Areh* **Yes.**
M4 *Vocabulary search* They search their lexicon for a specific word in English, sometimes they request help from their partner. The typical sentence for this category is: *How do you say X in English?* The learners have a meaning in mind but they don't know the specific form.	**S1**: *Ke mishure, shoshtan chee mishod*? **Which washes, how do you say wash in English?** **S2**: Washing, wash *mishe dige* **It is 'wash'.**
M5 *Reconstruction of the sentence using their own words* They reconstruct the meaning of the sentence or the sentence itself, using the contextual, background knowledge. This can be either in Farsi or in English; they want to make sure that they have joint agreement on the general meaning of the sentence.	**S1:** *Ba'd* I have to take to back **Then** **S2:** So **S1:** So I have **S2:** To **S1:** *Bebin inja take dige fek nemikonam bekhad, mikhad*? **See, I think 'take' is not needed here anymore, is it?** **S2:** *Khob mage tu az ru un naneveshti?* **Okay, didn't you write based on the tape?** **S1:** *Chera. Vali shayad eshtebah shenide basham.* I have to take to back *ya* I have to? **Why not? But, maybe, I have heard it by mistake.** **S2:** I have to **S1:** *Injuri doroste masalan*? **Is it correct in this way?** **S2:** *Man che midunam un tu hatman bude. Velesh kon hamuno benevisim.* **How do I know? It was said in the tape. Forget it, write the same.** **S1:** *Mikhay benevisim? To chee? To back shop badesh goft?* **Do you want to write? Then she said, 'to' what? 'To back shop'?** **S2:** Take back to shop *shayad gofte.* **Maybe she said ' take back to shop'.**

Table 3 Orthographic episodes

Orthographic categories	Examples
O1 *Spelling* They offer a correction or request for the confirmation of the word spelling.	**S1: A thief is someone** **S2**: That the police man **S1**: Catches him, **S2**: Catch **S1**: T *mikhad vasatesh,* **It needs a /T/ in the middle.**
O2 *Punctuation* They offer a correction or request for the confirmation of sentence punctuation (e.g. comma).	**S1:** This is the **S2:** Family **S1:** Family, *cama nemikhad? na* **It doesn't need comma. Does it?** **S2:** No. (…) was ee vi- ee visited.
O3 *Pronunciation* They correct the pronunciation of their partners, offer a correct pronunciation for a word or request for confirmation.	**S1**: /Prodice/ **S2**: Produce **S1**: Produce e *ya* /prodice/? **Is it 'produce or /prodice/?** **S2**: Produce. *Tolid mikone.* **makes**

Table 4 Identification episodes

Categories	Examples
I1 *Identification of sounds/ words* They try to identify the exact sounds or words they had heard in the tape.	**S1***: Computer chee shod?* **What happened to 'computer'?** **S2**: *Chee shod*? Break break↑ break ↑*ye break dasht. Yadam oftad.* **What happened? 'Break, break↑break'↑ it had a 'break'. I remembered it just now.** **S1**: *Biya inja benevis.* **Write it here.** **S2**: Break down.
I2 *Phrases/ clauses* They try to identify the exact phrases or clauses that were mentioned in the tape.	**S1:** *Mikhay benevisim? To chee? To back shop badesh goft?* **Do you want to write? Then she said, 'to' what? 'To back shop'?** **S2:** Take back to shop *shayad gofte.* **Maybe she said ' take back to shop'.**

I3 *Sentences* They discuss the exact sentence which was mentioned in the tape.	**S1**: *Vali badesh everything ham goft.* Everything **But then she said that 'everything'** **S2**: Everything went wrong.

Table 5 Discourse episodes

Discourse categories	Examples
D *Ordering the sentences* They discuss the sentences which follow or precede the sentence under discussion.	**S1**: *Bad inja goftesh ke* then the CD *fek konam badesh ino goft. Ya qablesh goft*↑ **Then she said here 'then the CD', I think she said this after that or she might have said it before that**↑ **S2**: *Hatman tuo neveshti inja bude dige.* **If you have written it, maybe it has been mentioned.** **S1**: [*Age to fek mikoni-* **If you think-** **S2**: [*Eshkal nadare tarkibesh bebin.* **Check the structure of the sentence.**

Table 6 Value of the LREs

Definition	**Example**
W *Weighty* 'The learners draw overtly on their knowledge of the language system or context, or justify their choices with explanation' ((Fortune and Thorp, 2001: 153).	**S1**: *Khob hala, to be yad miari pole khaju ro ke to ee* **Okay, now, do you remember Pole Khaju where you** [that you go to. **S2**: [that you go to. **S1**: *In gozashte hast.* That you go to *to rafte budi.* **This is past tense. You went to.** **S2**: That you went? **S1**: *Went o nemitunim bekar bebarim, be nazare man ham hamun khube.* Do you remember pole khaju **We can't use 'went', I think that is fine.** that you go to. *Be yad miari pole kahju ro ke to rafti.* **Do you remember Pole Khaju that you went to.** **S2**: *Bekhater miyari? Rafti. Man in* that you go to **Do you remember? You went.** 'that you go to'. **S1**: *Bekhater miyari pole khaju ro ke to mikhay beri.* **Do you remember Pole Khaju where you want to go.**

	S2: Will↑ *nemishe ke.* **'Will'↑ it can't be 'will'.** **S1**: *Na na benazaram bishtar be gozashte.* **No, no, I think it refers to the past.** **S2**: *Akhe in DO dare* ↑ **But it has 'do'** ↑ **S1**: *Areh, akhe avvalesh DO be kar rafte, injuri bishtar mani mide.* **Yes. But 'do' has been used in the beginning of the sentence, this makes more sense.** **S2**: *Khhob chera, bebin gofte bekhater miyari un jayee ro ke rafti*? **Okay, why? See, it says that 'do you remember there that you went'?** **S1**: *Khob man ham migam gozashte mani mide. Hamun gozashte mani mide.* **Ok, I also said that it means past, it means past.** **S2**: *Khob.* **Ok.** **S1**: *Hamun gozashte bekar bebarim.* Went. **Let's use past tense 'went'.** **S2**: Went to↑ *tamum shod.* **Finished.**
L *Light* In light episodes, 'there is no such depth of engagement and learners seem to be relying simply on the memory of what they heard, or what 'sounds right' intuitively. Learners seem to be almost playing with language. These episodes are not necessarily short' (*ibid.* : 153).	**S1**: Evening. This is the restaurant that we ate every evening. *Chon farqi nemikone niga kon, bebin, which ro* **Because, there is no difference, see 'which'.** **S2**: *Hala mikhay which bezarim, midunam, injayee ke* **Use 'which', if you want. I know, here we have used** *that gozashtim inja az which estefade mikonim.* **'that', let's use 'which' now.** **S1**: *Khob which o ha bezar.* **Ok, use 'which'.** **S2**: Restaurant **S1**: *Which benevis, the, the the benevis balash benevis.* **Write 'which'.** **Write 'the' above it.** **S2**: Which this the

	S1: This is the restaurant. **S2**: [Which **S1**: [Which we ate every evening.

Table 7 Nature of the LREs

C *Continuous:* 'If the learners discuss a language form and conclude the discussion without returning to the form later, the episode is considered continuous. A continuous episode remains on the same language point without any other obvious focus.	**S1:** A waiter is someone **S2:** Who, who [bring **S1:** [give *areh* bring a food for **Yes.** **S2:** Brings **S1:** *Areh* **Yes.** **S2:** Food for customer. *Khob.* **Okay.**
D *Discontinuous* In discontinuous episodes, the learners halt discussion of a language point and return to it later, sometimes more than once.	S1: Any way thank you very much for the *chee*? **what?** **S2**: [Earrings **S1**:[Earrings **S2**: Be really beautiful **S1**: Be really beautiful. S2: That **S1**: Really is, that uhm was really beautiful. **S2:** Earrings, *baz* was *mishe ya* were? **Is it 'was' or 'were'?** **S1**: *Ear az gush dadan miyad dige.* **Ear derives from the same root as listening.** **S2**: *Khob jame.* **Okay it is plural.** **S1**: That **S2**: *Gushvare mishe dige areh?* earrings *gushvare nemishe?* **Is it earring? Yes? Earrings means earring, doesn't it?** **S1**: Earring *areh gushvare mishe.* **Yes earring means earring.** **S2**: *Khob unvaqt cheeze?*

	Okay so it is *thing*? **S1**: That **S2**: Was *jame ya mofrade?* **Is it plural or singular?** **S1**: Was-*e.* **It is was.** **S2**: Was **S1**: *Na were-e. chun do tast dige.* Was very beautiful. **No it is were. Because it is two earrings** **S2**: That was really beautiful **S1**: Were *bezan barash.* **Write 'were' for it.** **S2**: Were really beautiful **S1**: Really beautiful.
E *Embedded:* An embedded episode is necessarily preceded and followed by a discontinuous one. A lexical LRE might be embedded within a grammatical LRE or vice versa.	Example: The underlined section in the above excerpt (type: meaning-based: word meaning) embedded within a discontinuous LRE (type: grammatical: subject-verb agreement)
O *Overlapping:* In some exchanges, two or more episodes overlap. In these episodes, within one exchange two points are dealt with. In the opposite example, both verb form (subject verb agreement: 'were' is used for plural subject 'friends') and vocabulary choice ('unkind' instead of 'angry') has been considered in one exchange.	**S1:** *Mitunim begim* my friends **We can say** **S2:** Who I met **S1:**last week **S2**: last week **S1**: **Was** very **angry** **S2:Were** very **unkind**

Table 8 Outcome of the LREs

+ out *Correctly solved* LRE refers to those LREs in which the problem is solved correctly,	**S1:** A waiter is someone **S2:** Who, who [bring **S1:** : [give *areh* bring a food for

either by self-correction or by correction by another learner.	**Yes.** **S2:** Brings **S1:** *Areh* **Yes.** **S2:** Food for customer. *Khob.* **Okay.**
-out *Incorrectly solved* LRE includes those LRE in which the problem is solved incorrectly.	**S1:** A cup is something **S2:** That you eat, aha you [drink **S1:** [drink **S2:** Drink *shoma minushid caffee, caffee doroste?* **You drink 'caffee', is 'caffee' correct?** **S1:** *Doroste, areh* **It is correct, yes,**
?out *Unresolved:* includes the LREs in which the problem was left unresolved. Either because the subject was dropped or because the pair could not come to a joint solution.	**S1:** My friends **S2:** *Gushe gir mishod chee?* **How do you say secluded in English?** **S1:** *Tanha yani? Monzavi* **Do you mean alone? Secluded** **S2:** *Nemidunam,* **I don't know.** **S1:** *Veleshun kon.* **Forget about it.**

Appendix 15

Inter-rater reliability assessment

Types of LREs

Meaningful pair two

	Rater 1	Raters 1& 2	Rater 2	Raters 2 & 3	Rater 3	Raters 1 & 3
LRE 1	G1	1	G1	0	M2	0
LRE 2	M4	1	M4	1	M4	1
LRE 3	M1	0	M4	0	M2	0
LRE 4	M2	0	O1	0	G10/M4	0
LRE 5	G13	1	G13	0	M2	0
LRE 6	M2	1	M2	1	M2	1
LRE 7	M1	1	M1	1	M1	1
LRE 8	G3	1	G3	0	M1	0
LRE 9	M3	1	M3	1	M3	1
LRE10	G10	0	G3	0	G10	1
LRE 11	G13	0	M2	1	M2	0
LRE 12	G13	1	G13	1	G13	1
LRE 13	M2	1	M2	1	M2	1
LRE 14	M3	1	M3	0	G10	0
		8/10		6/10		6/10

Meaningful pair nine

	Rater 1	Raters 1& 2	Rater 2	Raters 2 & 3	Rater 3	Raters 1 & 3
LRE 1	G14	0	G3	0	G14	1
LRE 2	M4	0	G3	0	M4	1
LRE 3	M4	1	M4	1	M4	1
LRE 4	M2	0	G3	--	No response	--
LRE 5	G1	1	G1	1	G1	1
LRE 6	G3	1	G3	0	G10	0
LRE 7	M3	0	M2	0	G10	0
LRE 8	G4	1	G4	0	M1	0
LRE 9	M2	1	M2	0	M1	0
LRE10	G8	0	G3	0	G8	1
LRE 11	G1	1	G1	1	G1	1
LRE 12	M4	1	M4	1	M4	1
LRE 13	M2	1	M2	1	M2	1
LRE 14	G10	1	G10	1	G10	1
		8/10		5/10		6/10
Total common response		16/20		11/20		12/20
Percent of agreement		80%		55%		60%
Average percent of agreement	65% percent agreement between the three raters					

Nature of LREs

Meaningful pair two:

	Rater 1	**Raters 1& 2**	**Rater 2**	**Raters 2 & 3**	**Rater 3**	**Raters 1 & 3**
LRE 1	Continuous	1	Continuous	1	Continuous	1
LRE 2	Embedded	1	Embedded	0	discontinuous	0
LRE 3	Discontinuous	1	Discontinuous	0	Continuous	0
LRE 4	Continuous	1	Continuous	1	Continuous	1
LRE 5	Continuous	1	Continuous	1	Continuous	1
LRE 6	Continuous	1	Continuous	1	Continuous	1
LRE 7	Continuous	1	Continuous	1	Continuous	1
LRE 8	Continuous	1	Continuous	1	Continuous	1
LRE 9	Continuous	1	Continuous	1	Continuous	1
LRE10	Continuous	1	Continuous	1	Continuous	1
LRE 11	Continuous	1	Continuous	1	Continuous	1
LRE 12	Continuous	0	Discontinuous	0	Continuous	1
LRE 13	Embedded	1	Embedded	0	Continuous	0
LRE 14	Discontinuous	-	No response	-	Continuous	0
		8/10		7/10		8/10

Meaningful pair nine:

	Rater 1	**Raters 1& 2**	**Rater 2**	**Raters 2 & 3**	**Rater 3**	**Raters 1 & 3**
LRE 1	Continuous	0	Embedded	0	Continuous	1
LRE 2	Embedded	0	Discontinuous	0	Continuous	0
LRE 3	Embedded	1	Embedded	0	Continuous	0
LRE 4	discontinuous	1	Discontinuous	0	Continuous	0
LRE 5	Continuous	1	Continuous	1	Continuous	1
LRE 6	Continuous	1	Continuous	1	Continuous	1
LRE 7	Continuous	1	Continuous	1	Continuous	1
LRE 8	Continuous	1	Continuous	1	Continuous	1
LRE 9	Continuous	1	Continuous	1	Continuous	1
LRE10	Continuous	1	Continuous	1	Continuous	1
LRE 11	Continuous	1	Continuous	1	Continuous	1
LRE 12	Continuous	0	Discontinuous	0	Continuous	1
LRE 13	Continuous	1	Continuous	--	No response	--
LRE 14	Continuous	1	Continuous	1	Continuous	1
		9/ 10		8/10		9/10
Total common response		17/20		15/20		17/20
Percent of agreement		85%		75%		85%
Average Percent of Agreement	81.66% percent agreement between the three raters					

Appendix 16

Implicational scales: Mechanical and Meaningful learners

A) Implicational Scale: Mechanical group (Pre-test)

Coefficient of scalability = .9696

Participants	SU	DO	OP	GE	
13	**1**	0	**1**	0	
16	**1**	0	**1**	0	
1	**1**	0	0	0	
2	**1**	0	0	0	
12	**1**	0	0	0	
15	**1**	0	0	0	
3	0	0	0	0	
4	0	0	0	0	
5	0	0	0	0	
6	0	0	0	0	
7	0	0	0	0	
8	0	0	0	0	
9	0	0	0	0	
10	0	0	0	0	
11	0	0	0	0	
14	0	0	0	0	
17	0	0	0	0	
18	0	0	0	0	
Correct	6	0	0	0	6
Incorrect	0	0	2	0	2

Calculating coefficient of scalability:

$\mathbf{C}_{rep}$= 1— total number of errors/ (number of students) x (number of items) = 1— 2/18x4=.9722

MM_{rep} = total correct/number of students x number of items=6/18x4=.0833

% improvement = $\mathbf{C}_{rep}$— MM_{rep}=.9722—.0833=.8889

Coefficient of scalability = % improvement/ 1 — MM_{rep}= .8889/1— .0833= .9696

B) Implicational Scale: Mechanical group (Post-test)

Coefficient of scalability=.9361

Participants	SU	DO	OP	GE	
1	**1**	**1**	**1**	0	
2	**1**	**1**	**1**	0	
3	**1**	**1**	**1**	0	
12	**1**	**1**	**1**	0	
13	**1**	**1**	**1**	0	
14	**1**	**1**	**1**	0	
15	**1**	**1**	**1**	0	
5	**1**	**1**	0	0	
16	**1**	0	**1**	0	
9	**1**	0	0	0	
8	0	0	**1**	0	
18	0	**1**	0	0	
4	0	0	0	0	
6	0	0	0	0	
7	0	0	0	0	
10	0	0	0	0	
11	0	0	0	0	
17	0	0	0	0	
Correct	10	8	7	0	25
Incorrect	0	1	2	0	3

C) Implicational Scale: Meaningful group (Pre-test)

Coefficient of scalability=.9523

Participants	SU	DO	OP	GE	
1	**1**	**1**	0	**1**	
9	**1**	**1**	0	0	
18	**1**	0	**1**	0	
8	**1**	0	0	0	
11	**1**	0	0	0	
15	**1**	0	0	0	
16	**1**	0	0	0	
17	0	**1**	0	0	
2	0	0	0	0	
3	0	0	0	0	
4	0	0	0	0	
5	0	0	0	0	
6	0	0	0	0	
7	0	0	0	0	
10	0	0	0	0	
12	0	0	0	0	
13	0	0	0	0	
14	0	0	0	0	
Correct	7	2	0	0	9
Incorrect	0	1	1	1	3

D) Implicational Scale: Meaningful group (Post-test)

Coefficient of scalability = .9535

Participants	SU	DO	OP	GE	
1	**1**	**1**	**1**	**1**	
9	**1**	**1**	**1**	**1**	
18	**1**	**1**	**1**	**1**	
11	**1**	**1**	**1**	0	
15	**1**	**1**	**1**	0	
12	**1**	**1**	0	0	
16	**1**	**1**	0	0	
7	**1**	0	0	0	
8	**1**	0	0	0	
17	**1**	0	0	0	
2	0	0	**1**	0	
4	0	0	**1**	0	
3	0	0	0	0	
5	0	0	0	0	
6	0	0	0	0	
10	0	0	0	0	
13	0	0	0	0	
14	0	0	0	0	
Correct	10	7	5	3	25
Incorrect	0	0	2	0	2

Appendix 17

Time on task: Mechanical and Meaningful pairs

Table 1 Time on task for the Mechanical pairs

	Session1 (minutes)	Session2 (minutes)	Session3 (minutes)	
Mechanical Group	**Substitution**	**Transformation**	**Text-development**	**Total minutes**
Pair 1	23	22	25	70
Pair 2	35	42	36	113
Pair 3	28	34	40	102
Pair 4	45	36	45	126
Pair 5	20	28	28	76
Pair 6	22	28	27	**77**
Pair 7	31	30	19	80
Pair 8	25	27	33	85
Pair 9	29	23	25	77
Total	**258**	**270**	**278**	**806**
Average	**28.66**	**30**	**30.88**	**89.55**

Table 2 Time on task for the Meaningful pairs

Meaningful Group	**Picture description**	**'Let's complain'**	**Dictogloss**	**Total minutes**
Pair 1	28	38	30	96
Pair 2	28	46	29	103
Pair 3	43	40	30	113
Pair 4	31	30	16	**77**
Pair 5	30	36	21	87
Pair 6	45	47	31	123
Pair 7	28	31	24	83
Pair 8	30	32	24	86
Pair 9	21	29	18	68
Total	**284**	**329**	**223**	**836**
Average	**31.55**	**36.55**	**24.77**	**92.88**

Appendix 18

Number of LREs: Mechanical and Meaningful pairs

Table 1 Total number of LREs in each pair of the Mechanical group

Mechanical Group	**Substitution** No. of LREs	**Transformation** No. of LREs	**Text-development** No. of LREs	Total
Pair 1	23	15	36	74
Pair 2	39	30	22	91
Pair 3	16	9	23	48
Pair 4	32	27	40	99
Pair 5	11	20	9	40
Pair 6	9	16	8	33
Pair 7	13	18	21	52
Pair 8	24	13	24	61
Pair 9	30	18	26	74
Total	**197**	**166**	**209**	**572**
Average	**21.88**	**18.44**	**23.22**	**63.55**

Table 2 Total number of LREs in each pair of the Meaningful group

Meaningful Group	**Picture description** No. of LREs	**'Let's complain'** No. of LREs	**Dictogloss** No. of LREs	Total
Pair 1	37	56	26	119
Pair 2	55	44	21	120
Pair 3	44	40	26	110
Pair 4	23	23	9	55
Pair 5	22	26	10	58
Pair 6	49	36	11	96
Pair 7	37	27	16	80
Pair 8	35	32	14	81
Pair 9	20	21	16	57
Total	**322**	**305**	**149**	**776**
Average	**35.77**	**33.88**	**16.55**	**86.22**

Appendix 19

Distribution of relative clause LREs

Table 1. Distribution of relative clause LREs in the Mechanical pairs

	G1	G2	G3	G4	G5	G6	G7	G8	G9	Total
Mech1 S1	5	0	0	3	0	2	0	0	4	14
Mech1 S2	2	0	0	2	2	0	0	0	0	6
Mech1 S3	9	0	0	3	5	0	0	0	1	18
Total	**16**	**0**	**0**	**8**	**7**	**2**	**0**	**0**	**5**	**38**
Mech2 S1	21	0	0	0	0	1	0	1	2	25
Mech2 S2	7	0	0	5	0	0	0	0	0	12
Mech2 S3	6	0	0	0	0	0	0	0	0	6
Total	**34**	**0**	**0**	**5**	**0**	**1**	**0**	**1**	**2**	**43**
Mech3 S1	7	0	0	2	0	0	0	2	1	12
Mech3 S2	3	0	0	0	0	0	0	0	0	3
Mech3 S3	6	0	0	2	0	0	0	3	0	11
Total	**16**	**0**	**0**	**4**	**0**	**0**	**0**	**5**	**1**	**26**
Mech4 S1	4	0	0	0	0	4	2	1	4	15
Mech4 S2	10	0	0	4	0	0	0	1	0	15
Mech4 S3	6	0	0	1	0	0	0	5	1	13
Total	**20**	**0**	**0**	**5**	**0**	**4**	**2**	**7**	**5**	**43**
Mech5 S1	5	0	0	1	0	0	0	0	2	8
Mech5 S2	7	0	0	6	1	0	0	1	0	15
Mech5 S3	4	0	0	0	0	0	0	1	0	5
Total	**16**	**0**	**0**	**7**	**1**	**0**	**0**	**2**	**2**	**28**
Mech6 S1	4	0	0	0	0	1	0	0	1	6
Mech6 S2	5	0	0	4	0	0	0	0	0	9
Mech6 S3	4	0	0	0	0	0	0	0	0	4
Total	**13**	**0**	**0**	**4**	**0**	**1**	**0**	**0**	**1**	**19**
Mech7 S1	1	0	0	0	0	0	0	0	5	6
Mech7 S2	4	0	0	4	0	0	0	0	0	8
Mech7 S3	1	0	0	2	0	0	0	1	1	5
Total	**6**	**0**	**0**	**6**	**0**	**0**	**0**	**1**	**6**	**19**
Mech8 S1	6	0	0	1	0	2	0	0	2	11
Mech8 S2	1	0	0	2	0	0	0	0	0	3
Mech8 S3	4	0	0	0	0	0	0	1	0	5
Total	**11**	**0**	**0**	**3**	**0**	**2**	**0**	**1**	**2**	**19**
Mech9 S1	18	1	0	4	2	0	1	0	0	26
Mech9 S2	8	0	0	3	0	0	0	0	0	11
Mech9 S3	15	0	0	3	0	0	0	0	1	19
Total	**41**	**1**	**0**	**10**	**2**	**0**	**1**	**0**	**1**	**56**
Total RC	**173**	**1**	**0**	**52**	**10**	**10**	**3**	**17**	**25**	**291**

Table 2. Distribution of relative clause LREs in the Meaningful pairs

	G1	G2	G3	G4	G5	G6	G7	G8	G9	Total
Mean1 S1	4	0	0	2	0	0	0	0	6	12
Mean1 S2	4	0	3	3	0	0	0	3	1	14
Mean1 S3	0	0	0	0	0	0	0	0	0	0
Total	**8**	**0**	**3**	**5**	**0**	**0**	**0**	**3**	**7**	**26**
Mean2 S1	8	1	3	5	0	0	1	1	1	20
Mean2 S2	4	0	3	3	0	0	0	3	3	16
Mean2 S3	0	0	0	0	0	0	0	1	0	1
Total	**12**	**1**	**6**	**8**	**0**	**0**	**1**	**5**	**4**	**37**
Mean3 S1	1	3	2	2	0	0	1	0	4	13
Mean3 S2	4	0	0	1	0	0	0	0	2	7
Mean3 S3	0	0	0	0	0	0	0	0	0	0
Total	**5**	**3**	**2**	**3**	**0**	**0**	**1**	**0**	**6**	**20**
Mean4 S1	2	0	2	0	0	0	0	0	3	7
Mean4 S2	1	0	0	2	0	0	0	0	0	3
Mean4 S3	0	0	0	0	0	0	0	0	0	0
Total	**3**	**0**	**2**	**2**	**0**	**0**	**0**	**0**	**3**	**10**
Mean5 S1	3	1	0	0	0	1	1	3	1	10
Mean5 S2	1	1	0	0	0	0	0	1	2	5
Mean5 S3	0	0	0	0	0	0	0	0	0	0
Total	**4**	**2**	**0**	**0**	**0**	**1**	**1**	**4**	**3**	**15**
Mean6 S1	10	2	1	0	0	0	0	2	0	15
Mean6 S2	0	0	0	0	0	0	0	2	1	3
Mean6 S3	0	0	0	0	0	0	0	0	0	0
Total	**10**	**2**	**1**	**0**	**0**	**0**	**0**	**4**	**1**	**18**
Mean7 S1	14	1	0	1	0	0	0	0	1	17
Mean7 S2	6	0	1	0	0	0	0	0	1	8
Mean7 S3	1	0	0	0	0	0	0	1	0	2
Total	**21**	**1**	**1**	**1**	**0**	**0**	**0**	**1**	**2**	**27**
Mean8 S1	4	1	0	0	3	0	1	0	0	9
Mean8 S2	0	0	1	4	0	0	0	0	2	7
Mean8 S3	0	0	0	0	0	0	0	0	0	0
Total	**4**	**1**	**1**	**4**	**3**	**0**	**1**	**0**	**2**	**16**
Mean9 S1	4	0	1	0	0	1	0	0	0	6
Mean9 S2	3	0	1	1	0	0	0	1	0	6
Mean9 S3	0	0	0	0	0	0	0	0	0	0
Total	**7**	**0**	**2**	**1**	**0**	**1**	**0**	**1**	**0**	**12**
Total RC	**74**	**10**	**18**	**24**	**3**	**2**	**4**	**18**	**28**	**153**